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Christmas at Paddington

VISITORS to Paddington station are again cheered at this season by the sight of a Christmas tree, standing 30 ft. in its tub and flowering with an effulgence of globular ornament which should gratify the Minister of Transport. Impressive quantities of bunting, corrugated tinfoil and other materials of a similarly exotic sort have assisted in the transformation of the circulating area. The twelve columns which support the roof are cunningly disguised as crackers, from among which the traveller would accept without comment the appearance of Father Christmas pushing a barrow. The whole scene is floodlit, and bells, stars, and a comet with a message of greeting in its tail strike the appropriate note overhead. Mistletoe finds no place in the modern spirit which has inspired the decorations, and since we understand that kissing is an exercise which demands a certain compatability of temperament between the parties concerned if it is to yield the utmost gratification, it seems to have been wisely precluded from the necessarily unreflecting atmosphere of a great terminus at Christmas time. The rashly sentimental had better betake themselves to the north, where the L.M.S.R. has distributed some 130 tons of the beguiling plant among the important towns for the diversion of its patrons. Those who go north by the L.N.E.R. will find the seasonal spirit very much in evidence at Newcastle where in the station there is a fine, locally-grown, 36-year old Christmas tree in full blossom with the usual ornaments and 252 coloured lights.

A. H. Tatlow

In our personal columns this week it is our painful duty to announce the death of one who, in the words of a South African appreciation, was "the greatest force for publicity that South Africa has ever known": we refer to Mr. A. H. Tatlow. He was mainly responsible for the building up of a publicity organisation, the activities and ramifications of which are widespread, and one that may be considered as a model of what such publicity should be. Mr. Tatlow was, in fact, the pioneer throughout the Empire of overseas railway publicity activity. As long ago as 1905 he conceived and initiated what is now looked upon as one of the finest house publications, under the name of the *South African Railways and Harbours Magazine*. For 25 years he was Editor of it and its predecessor, and, since Union in 1910 and until his retirement in 1930, Mr. Tatlow was in charge of the S.A.R. & H. Publicity Branch. During that time he organised many special publicity developments, including the establishment of branches in Europe and America, and these, together with a notable series of publications, have materially assisted the development of South African tourist traffic and internal travel within the Union. Mr. Tatlow comes of a well-known and honoured English railway family and his loss will be deeply felt both here and in South Africa.

* * * *

The Week's Traffics

Merchandise makes the best showing in the traffic receipts of the four group companies for the past week, which compares with a week in 1933 when both the London Midland & Scottish and the London & North Eastern recorded advances of £40,000 in merchandise earnings and the Great Western had one of £24,000. The receipts of the four companies for the 50 weeks of the current year are estimated to amount to £143,364,000, an increase of £5,180,000 or 3·75 per cent. Towards this total passenger train earnings contribute £63,459,000, an increase of £915,000 or 1·46 per cent. Merchandise earnings, at £50,487,000, have advanced by £2,973,000 or 6·26 per cent., and the coal class traffics of £29,418,000 show an improvement of £1,292,000 or 4·59 per cent.

	50th Week				Inc. or dec.	
	Pass. &c.	Goods, &c.	Coal, &c.	Total.	Year to date	
	£	£	£	£	£	%
L.M.S.R. ..	+ 12,000	+ 15,000	− 36,000	− 9,000	+ 2,136,000	+ 3·86
L.N.E.R. ..	+ 6,000	+ 8,000	− 13,000	+ 1,000	+ 2,049,000	+ 5·05
G.W.R. ..	+ 1,000	+ 1,000	− 16,000	− 14,000	+ 584,000	+ 2·49
S.R.	+ 7,000	− 1,000	− 5,000	+ 1,000	+ 411,000	+ 2·19

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Nine Months' Traffics

From the analysis published with the Ministry of Transport statistics for September, 1934, it appears that passenger train receipts for the first nine months of the year for all standard gauge railways in Great Britain, except London Transport railways and the Whitechapel & Bow, amounted to £52,314,510, an increase of £1,073,379 or 2·09 per cent. Freight train receipts on all standard-gauge lines for the 40 weeks to October 6 were £64,903,384, an increase of £4,451,913 or 7·36 per cent. Passenger journeys, apart from those of season-ticket holders, showed an increase of 3·51 per cent., and receipts from ordinary passengers, not including season tickets, amounted to £36,503,379, an increase of £943,285 or 2·65 per cent. In the third quarter of the year, so far as can be calculated, passenger train receipts amounted to £22,410,046, an improvement of £493,842 or 2·25 per cent., a rate of increase which, as might have been expected for the holiday period, was greater than the average for the nine months. Freight train receipts for the twelve weeks to October 6 were £19,129,458, an advance of £977,706 or 5·39 per cent., which is below the average rate of increase

for the 40 weeks. Parcels receipts during the three months were down £57,968, but first class ordinary receipts were up £16,971, and averaged about 6 per cent. of the total ordinary passenger receipts.

* * * *

The Workable Timetable

Lecturing on " timetables in theory and practice " to the Institute of Transport on December 18, Mr. W. E. Green indicated the developments in railway traffic which have rendered desirable some form of centralised timetable organisation. With the coming of the summer ticket, the days have passed when cheap fare passengers could be moved at the times convenient to the companies, so that at peak periods expresses may now have to be run in as many as seven parts. The demand for faster freight transport is to-day being heard from consignors of the heavier classes of goods as well, and this also gives rise to new problems. The result is that the established orders for precedence in traffic working are no longer universally tenable. The importance of a train and its claims to line occupation vary in the course of a journey, as well as being subject to seasonal fluctuations. Flexibility of outlook in timetable construction is therefore called for, and Mr. Green considered that this could best be achieved by a central timetable department taking a view of the line as a whole. The workable timetable would be one in which practicability of operation was recognised as the principle to which the sometimes optimistic requirements of individual departments must subordinate themselves.

* * * *

Belgium in 1935

Readers are probably aware that an international exhibition on an ambitious scale is to be opened at Brussels in April next and to last for six months. Its importance lies in the fact that there is not likely to be another show of these dimensions for some years, and Continental countries have not been slow to appreciate it; seventeen will be represented by official exhibits. The British Government is erecting a pavilion, in which the keynote of the exhibits will be the prestige, both national and commercial, of the Empire. The industries participating include railways, shipping, textiles, steel, motors, scientific instruments, and rubber. At the same time the Belgian railways will be celebrating their centenary. A considerable increase of travel to Belgium is therefore anticipated, and comprehensive steps are being taken to meet the demand. In London a new and well-equipped Belgo-Luxembourg tourist office has been opened at 99, Regent Street, Piccadilly Circus. At the inaugural ceremony last week by the Belgian Ambassador, it was pointed out that the existence of this new office was proof in itself of goodwill and co-operation between all the interested parties, as it represented not only the Belgo-Luxembourg tourist organisation, but also the World Exhibition Committee, the Belgian National Railways, and the Belgian Marine Department.

* * * *

Danish State Railways

The report of the Danish State Railways for the financial year 1933-1934 shows an encouraging improvement and points to a turn of the tide towards brighter times. The industrial situation in Denmark is better, and this is reflected in increased receipts from all classes of traffic, to which an extension of railway-owned bus services has contributed. Total receipts rose by 8,500,000 Kr. to 100,415,000 Kr., and working expenses by 345,000 Kr. to 105,470,000 Kr., leaving an operating deficit of 5,055,000 Kr., compared with 13,210,000 Kr. the previous year. A sum of 14,860,000 Kr. was required for interest and depreciation charges, so that the total loss was 19,915,000 Kr. compared with 42,080,000 Kr., a substantial improvement. On the recommendations of an enquiry committee, new principles have been followed in calculating these charges, resulting in their being practically halved. About one sixth of the goods traffic lost in the depression has been recovered and passenger receipts rose 12·26 per cent. Ninety-seven per cent. of these receipts are from third class tickets, journeys in the other classes having again declined. The length of railway open rose from 2,490 to 2,509 km. There were 19,051 persons employed against 19,786 previously, in spite of increased omnibus staff.

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Air Conditioning on the Pennsylvania

Summer and autumn are over with a sufficient margin to let us begin reviewing the results of experiments made in the way of cheapening and improving facilities for warm weather travel. Probably the most notable of the 1934 summer season experiments was the American one of supplying conditioned air to the passengers on all the principal expresses. Air conditioning had made some headway in previous years, but what was a novelty in 1933 became a common experience in 1934. On the Pennsylvania Railroad alone 700 air-conditioned cars were run in 166 daily trains, and it is estimated that approximately a million persons experienced the new comforts in each month of the season. Air conditioning has brought more business to the railways that have adopted it and while some of this has undoubtedly been a gain at the expense of the less progressive lines, the bulk represents a gain from the motorbus and the private automobile. On the Pennsylvania Railroad the mechanical compression, steam jet, and ice activated systems are all used, but the results so far as the passenger is concerned are the same. Freedom from noise, freedom from dirt, and imperceptibly moving air possessing the ideal degree of temperature and humidity, are the main advantages. In catering for passengers on air-conditioned cars, the Pennsylvania Railroad has taken more than the usual amount of money, cool weather meals of a substantial kind having been preferred to salads and ices.

* * * *

The Ups and Downs of Travelling

In the 4,000-mile journey across America from the Pacific to the Atlantic the floor of a railway freight car moves vertically up and down about 17 miles. We have it on the authority of Mr. C. E. R. Sherrington, who said so in his recent lecture (reported on p. 1038) to the Permanent Way Institution, and calculations to check it show that he is probably not far wrong. If the car rises and falls 17 miles, the average deflection due to rail joints would be about half an inch, which is not unlikely. Exactly what this absorbs in tractive effort is hard to estimate, but, apart from the effect of gravity, the effect of shock, noise and heat which accompany the passage of wheels over rail joints must be appreciable. Less power is required to drive a train along a track that is firm than one that yields much under the wheels. The late Mr. E. L. Ahrons remarked on the appreciable increase of speed made by identical engines hauling loads no lighter than formerly after the general replacement of 70-85 lb. rails by those weighing 95 lb. a yd. A participant in the discussion of Mr. Sherrington's paper suggested that, as the equivalent of 17 miles in 4,000 was 1 in 235, the gravity effect of deflecting rail joints would be the same as that of a continuous adverse gradient at that inclination. That, of course, invited and received the retort that, if

the car went up, it must also come down, since the cliffs at New York are not 17 miles high. The only immediate outcome of such speculations is to indicate an important source of saving by butt welding rails.

* * * *

Using Old Rails for a New Line

On September 20 last the new Tuinplaats-Marble Hall line of the South African Railways was officially opened. It is 36¼ miles long and, passing through easy country, involved no specially heavy engineering works. The line, however, is notable in that it is laid with second-hand 60 lb. rails welded together and carried on new steel sleepers, 1,980 to the mile. A large stock of old 60 lb. Cape Government Railway rails had accumulated in the various stores depots and were regarded as scrap on account of their short lengths, ranging from 21 to 24 ft. After a large number of tests, these rails were welded together to form lengths ranging from 63 to 72 ft. at a specially formed depot. There the rails were slid along greased skids from one operation to another, the layout being such as to allow of a straight flow through the rail-benders, on the skids where the railends were trued up, butted and fished, and thence to the welding sets. Two-hole fishplates were obtained by halving scrap four-hole plates, and, after bolting two rails together with their ends butting closely, the nuts were first tack-welded. Substantial welds were then run along the top and bottom of the fishplates and finally the rails were turned over and a substantial weld run across the joint of the butting flanges. It is noteworthy that the welding sets, besides being used for the primary purpose of joining the short rail lengths, were found useful in many other applications in connection with this new line.

* * * *

The Australian Gauge Question

An important meeting is likely to be held in the New Year under Mr. Lyons, the Commonwealth Prime Minister, and attended by the State Premiers and Railway Commissioners, to discuss the proposal to convert the trunk railways in Australia from broad (5 ft. 3 in.) to standard (4 ft. 8½ in.) gauge. Though the cost is estimated at £21 million, this large sum may be forthcoming as it would, it is stated, provide employment for 15,000 men for eight years and payment would be spread over that period. The Victorian Government Railways are mainly concerned, as they have 4,600 miles of broad gauge line in operation, and a further 104 miles under construction. South Australia also has 1,451 miles of 5 ft. 3 in. gauge, and though these are total mileages and not trunk line mileages, they give some indication of the proportion of the work likely to be undertaken on each system. New South Wales, Queensland, and Western Australia have no 5 ft. 3 in. gauge lines. The former has only 4 ft. 8½ in. and the other two virtually nothing but 3 ft. 6 in. gauge systems. The Commonwealth Government Railways have both 4 ft. 8½ in. and 3 ft. 6 in. gauge lines, but no broad gauge.

* * * *

The Latest "XD's" for India

The Vulcan Foundry Limited has recently completed three 5 ft. 6 in. gauge locomotives of the "XD" standard class for the South Indian Railway, one of which is illustrated and described on page 1029 of the present issue. These are very fine engines, incorporating features not previously adopted in this class. Steam distribution, formerly by piston valves and Walschaerts gearing, is now effected by poppet valve gear, the use of which is being considerably extended in India at the present time. The previous engines had eight-wheeled tenders supported upon two bogie trucks, but in the latest series six-wheeled tenders are used, with a corresponding reduction in the water and coal carrying capacity which is naturally reflected in the combined weight of the locomotive and tender in working order. Spring equalisation is applied between the leading and trailing trucks and the adjacent end pairs of coupled wheels, and the other details of equipment appearing in this issue show that a very modern specification has been worked to throughout. This, combined with the high class workmanship exhibited, has resulted in the production of a fine locomotive, from which excellent results may be confidently anticipated.

* * * *

Compound Locomotives

Although compounding is no longer so prominent in locomotive practice as heretofore, there is periodically a revival of interest in the subject. In America the Mallet locomotive gave a new lease of life to the compound engine, and high steam pressure has again revived, at least experimentally, the cross-compound and multi-cylinder compound. However, for locomotives built for regular service in this country, compounding has, with the notable exception of the numerous Midland compounds of the L.M.S.R., virtually disappeared. On the Continent matters have not proceeded so rapidly. When compounds were first experimented with over fifty years ago they quickly earned popularity, and there was a time when in some countries, notably France, Germany, Russia, the Balkan States, and to a lesser extent England, most locomotives were built as compounds. Superheated steam did not supersede the compound system in Europe, as happened in America, and only recently was the building of such engines discontinued as a standard practice on the German State Railway. Even there, the system has been revived, the latest express Pacific having four compound cylinders. In a recent paper read before the Canadian Railway Club on "Coming Motive Power and Locomotive Research," Mr. A. I. Lipetz suggested the possibility of at least a partial return to the system of compound working.

* * * *

Locomotive Crank-pins

The *Journal of the Institution of Locomotive Engineers* for September-October, 1934, reports an interesting discussion on locomotive crank-pins at a meeting of the Western Australian Centre, held at Perth. In introducing the subject, Mr. G. W. Blackwood remarked that although comparatively simple in appearance, the locomotive crank-pin calls for careful design in order to minimise maintenance. The crank for outside-cylinder engines, and for inside-cylinder coupling rods, is an overhanging pin requiring a section modulus four times that of the crank journal supported at each end. That the cantilever pin is avoided in less important details in locomotive design stresses the importance of proper treatment of crank-pins. British practice generally aims at making the length of the journal equal to the diameter, thus avoiding excessive rubbing speeds, while America favours the larger diameter with a relatively smaller length of bearing, giving greater flexibility but shorter life. Another speaker remarked that it was found that by adopting a range of 200 to 1,800 lb. per sq. in. of projected area for bearing pressures, and making the length of the journal approximately equal to the diameter, bearing pressures and rubbing were of a reasonable value. The desirability of maintaining crank-pins in a round state was also stressed, for which purpose it was suggested that portable grinding or turning machines should be supplied to running shops for re-conditioning work.

European Speed Comparisons

IN the August 31 issue of THE RAILWAY GAZETTE there appeared an article from a correspondent giving a list, drawn from the summer timetables, of all the runs in Europe booked to be covered at a start-to-stop speed of 58 m.p.h. or over, together with a summary of the aggregate mileage so scheduled by each railway. In that comparison the only British railways to show a high speed mileage of any really substantial extent were the Great Western and London Midland & Scottish, and their figures were both more than doubled by those of the Northern Railway of France. Neither the size of the railway system concerned, nor the relative density of its traffic, was, however, discussed in that article, as affording justification or the reverse for many high speed trains. An article on pp. 1034-7 of this issue deals in detail with these aspects of the matter. Its first table, based on one which appeared in the September issue of *Die Reichsbahn*, the official organ of the German State Railway, shows the aggregate mileage of railway runs booked at 90 km. (55·9 m.) p.h. and over, first as a percentage of the route mileage of the system concerned, and then as a percentage of the daily total passenger train mileage over each system. This table does not show, as was suggested in the September 28 issue of *The Times*, that 85 per cent. of British expresses are timed at 55·9 m.p.h. and over, as compared with 73·6 per cent. in France and only 32·5 per cent. in Germany; this contention was based on a misreading of the German article referred to. The facts are that these figures represent the relation of mileage booked at 55·9 m.p.h. and over to total route mileage, and they put Britain in the highest position in this respect; but in proportion to total daily train mileage, the British figure of 2·4 per cent. compares with 4·1 per cent. in France and 1·5 per cent. in Germany. However, any attempt at direct comparison on this basis is useless without bearing in mind the variation in total daily train mileage per route mile, and other circumstances; France, for example, though a bigger country than Great Britain, has not the same density of population, and, with cities more widely spaced than those of this country, especially in our industrial areas, the problem of introducing high speed rail services in France is thereby simplified.

In another table our contributor has taken 42 different European train services, and has subjected them to a careful analysis in order to discover what changes for the better have taken place in the two decades from 1914 to 1934. The analysis comprises a comparison of the speeds of the fastest trains in these two years, of the number of express trains operative, and, in particular, of the inclusive average speeds of all the express trains on each service. On this basis it appears that Great Britain cannot claim the same supremacy in speed that she could in 1914. Since then, while average service speeds—that is, the combined average speeds of all trains on the various services—have risen in Britain by 2·3 per cent. only, those of France have risen by 20·6 per cent., those of Germany by 11·4 per cent., and those of Italy by 23·8 per cent. This has brought the general French average speed, in all ranges of journeys up to 535 miles, from 44·2 to 53·3 m.p.h., while the British rise has been from 47·5 to 48·6 m.p.h. only; during the same period the German average has risen from 43·7 to 48·7 m.p.h. The average speed of the fastest trains on each service has risen even more markedly, in France by 19·8 per cent., from 50·5 to 60·5 m.p.h.; and in Germany by 18·1 per cent., from 49·7 to 58·7 m.p.h., as compared with a British rise of 3·2 per cent. from 52·3 to 54·0 m.p.h. These percentages of course must not be isolated from the actual speeds. Owing to Britain's general superiority in 1914, there was less scope for improvement, but the very high percentage rises on the Continent have left us, for the moment, definitely behind. Some British services have even declined in speed during this twenty-year period, of which the most notable example, probably, is the Great Western express service between Paddington and Birmingham, averaging 5·6 per cent. slower in 1934 than it was in 1914, and with only five two-hour trains to-day in comparison with fourteen in 1914.

With regard to the undoubtedly greater traffic density in this country, it must not be overlooked that this disadvantage is to some extent offset by the fact that our main lines are on the whole well provided with quadruple trackage. On the other hand, the Northern Railway of France, which is easily the fastest line in Europe, has four tracks for only the first 20 miles out of Paris; thence for 10 miles all traffic passes over one double line to Creil, where some trains diverge towards St. Quentin, and the next section of 47 miles from Creil to Longueau also carries a large proportion of it. The German main lines between Berlin, Halle, and Leipzig, again, are densely occupied, but several very fast schedules operate over them. Furthermore, no Continental main lines, even those over which high speed railcars are run, are so laid out as to permit of the maintenance of very high speeds uninterruptedly. The Flying Hamburger, for example, with its booking of 77·4 m.p.h. from Berlin to Hamburg and 76·3 m.p.h. in the reverse direction, has to reduce speed to 37 m.p.h. through Wittenberge, and is severely limited in speed over certain other stages of its journey. Many service slacks, too, are enforced on the routes of the very fast French railcars. Schedules of 60 to 65 m.p.h. are similarly practicable with reasonable loads over many British main lines, and have been proved capable of punctual observance over some of our busiest routes; it is more a question of timetable planning, and, as far as possible, of uniformity of speed, accompanied by strict observance of punctuality both at booked stops and intermediately.

The fact that some of our main line trains are of great weight is due in no small degree to post-war reduction of the services of earlier years, which has induced in the public the habit of travelling at certain specified hours. Increased traffic demands, coupled with the greater comfort and correspondingly reduced seating accommodation in proportion to tare weight of modern rolling stock, now complicate the problem by compelling division of these weighty trains; over certain routes, in consequence, rapid successions of fast trains have to follow closely on one another's heels at these hours. This plan has an undoubted advantage in giving longer intervals on main lines for freight and local traffic, but it is apt to cause difficulties at times of pressure when trains running in such series require duplication. Further, any delay to one express of such a series, from whatever cause, inevitably reacts on all the later trains in the same group. The obvious advantages of splitting up these train services over wider intervals seem to merit the closest investigation of its practicability. Attractive publicity of the resultant greater frequency of trains should encourage the public to alter its gregarious travel habits. The most compelling factor in any such publicity, apart from increased frequency of service, would be the offer of increased speed, rendered possible by the use of lighter trains, and this would enable Britain to keep pace with the development of railway speed abroad. As emphasised by Sir Josiah Stamp in his speech on December 10 at the Warrington Chamber of Commerce annual dinner, the principal *desideratum* is the general average speed that best meets general convenience, rather than the special speed of

special trains secured partly at the expense of other and slower moving traffic. For those desiring exceptional speed, Railway Air Services are steadily becoming more widely available. We consider, however, that much could be done in the levelling up of running speeds to a common standard, both in this country and on certain Continental lines. As emphasised by Mr. E. J. H. Lemon in his recent address to the Railway Students' Association, the more nearly all trains approach a uniform speed, the higher is the capacity of the line at such speeds. Lastly, the pooling of traffic and interavailability of tickets over so many routes have put within the grasp of the railways an instrument of extraordinary value in making possible more frequent service without additional train mileage; so far as can be traced, no serious attempt has yet been made to use it in spreading the " bunched " departure times of earlier competitive days.

* * * *

Indian Locomotive Developments

DURING the worst of the trade depression there has necessarily been a period of marking time on railways, but now at last indications of impending advances in many directions are manifest. The depression has not been a period of stagnation, however, and research into more efficient methods of working has been intense. In India, where all railway expenditure has been quite as severely curtailed as anywhere, there are signs that steps may soon be taken to make good deferred maintenance and renewal, and that the new material to be ordered will incorporate the results of recent research. The two Pope Reports* contained important recommendations, many of which are already being acted upon and others need only certain improved equipment to make them effective. Among the latter may be mentioned still longer locomotive runs, which, though productive of very large economies, depend essentially upon locomotive reliability. In a country like India, with its hot, dry climate and concomitant dust, bearing trouble is serious, and unless the problem is tackled thoroughly, might nullify any benefits of attempted longer through engine runs. The Pope Committee, recognising this, laid special stress on the necessity of keeping systematic records of bearings with the object of preventing the perpetuation of faulty designs.

It may be taken as certain that any new locomotives will incorporate the latest technical improvements, and two experimental locomotives, orders for which will shortly be placed, while conforming generally to the " XB " or medium-size Indian standard Pacific design, will, it is understood, in all probability include such refinements as roller bearings on all axles, increased bearing areas for big and little ends and side rods, the extended use of hard and soft grease lubrication and somewhat higher boiler pressure, made fully effective by large direct steam pipes and an up-to-date design of valves and, we hope, an improved blastpipe and large exhaust passages to minimise back pressure, which we consider of great importance. The satisfactory performance of the " XS " locomotives on the North Western Railway, referred to in THE RAILWAY GAZETTE of September 15, 1933, makes it almost certain that poppet valves will be used. Experience with steel fireboxes may lead to their adoption in at least one of the experimental engines, especially if feed water heating and purifying apparatus are adopted to overcome some of the difficulties hitherto experienced with this type of box. Improved trailing radial trucks and increased coal and water capacities might reasonably be expected as final touches to the production of locomotives capable of consistently efficient performance in continuous service. Comprehensive modern equipment however, is not confined to these engines, as a reference to page 1029 will show that the new " XD " 2-8-2 locomotives for the South Indian Railway are fitted, not only with poppet valve gear, but also with thermic syphons; grease lubrication for axleboxes, motion, brake and spring gear; steam-operated firedoors and other up-to-date fittings. The use of the booster and mechanical stoker on other " XD " engines on H.E.H. The Nizam's State Railway was also dealt with in these columns as long ago as March 31, 1933.

* Dealt with in THE RAILWAY GAZETTE of May 19, 1933, and June 29, 1934 (on pages 1125, 1138–39).

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Hallade Permanent Way Maintenance

IT is only in comparatively recent years that permanent way maintenance has received the attention its importance deserves. This is not to say that it was universally bad before, but rather that there were many lines, both at home and abroad, where it might have been very much better. The reason it was not lay rather in the ignorance of the men directly responsible than in lack of good intention or proper materials. As locomotive weights grew, and especially since the speeds of much of the traffic—goods even more notably than passenger—increased, much closer attention has been given to permanent way maintenance generally, the correct alignment of curves in particular. Probably nothing has made a more important contribution to the facilitating of this than the ingenious instrument invented by Monsieur Hallade, formerly of the Chief Engineer's Department of the Eastern Railway of France. The Hallade track recording instrument, properly used and read, reveals defects of curvature, alignment and level, and indicates what to do to remedy them.

The extent to which it is advisable to explain the why and wherefore of the Hallade revelations to the gangers and platelayers who are directly charged with track maintenance is still a matter of controversy in some quarters, but not on the London Midland & Scottish Railway. For some years past a series of Hallade lectures has been delivered all over the system by Mr. W. M. Bond, and such has been the clarity and enthusiasm of his exposition that practically every member of the permanent way staff has heard him. There have been instances of men so keen that they have braved the discomfort of missing their last train home and spending a night on a station after the lecture. Attendance has been voluntary, and the eagerness of the men's response to the company's offer of information and knowledge about their work has emphatically shown that it was justified.

The lectures have now been reprinted, with a foreword by Sir Harold Hartley, in the form of a handy 70-page booklet, $5\frac{3}{8}$ in. by $4\frac{1}{4}$ in., bound in red cloth, which we have before us, and of which a copy has been presented to every permanent way inspector and ganger, with the advice to the latter to lend it to any man in the gang who shows an interest in the work described. We should be surprised if such men are found to be any better than most book borrowers! The principles of the Hallade instrument, what it records and how the information shown may be used to bring the track to the highest standard of perfection, are simply explained with the aid of diagrams. We ourselves once heard Mr. Bond lecturing; we have read this booklet, which incorporates the information imparted verbally, and we would offer our congratulations to the author, as well as to Mr. W. K. Wallace, the Chief Civil Engineer of the L.M.S.R., for having thus made available in a handy and permanent form a source of reference which we feel sure must appeal with definite effect to the men charged with the responsible duties of permanent way maintenance.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Six Miles a Penny

Reading, Berks.
December 10

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—With reference to the editorial note in your issue of December 7 regarding long excursion journeys at cheap fares, I may say that, in the case of the Great Central Railway, actually the fare was 4s. 3d. for the return journey of 446 miles by the G.C.R. shortest route. This was the longest half-day trip on any railway in the country. It works out at over 8½ miles for a penny.

May I extend congratulations to you for being the first in the field with the published tabulated statement of the London to Leeds trial run, and for publishing the dynamometer reading of 100 m.p.h. as the top speed, in addition to your contributor's own timings.

Yours faithfully,
H. ADDIS

Railcars in France

Aguilas,
Murcia, Spain.
December 14

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In your leading article of November 23 on the use of railcars in France, you remark that France has been a pioneer of the high speed long distance railcar. You might have said the pioneer of the railcar in its original and primitive form, as, according to records of one make of car alone, moved by a steam engine of the flash type, the P.L.M. had 18 *automotives* and the P.O. 13 as early as 1907, and the use of these cars was considerably anterior to that date, as they were described in the Bulletin of the International Railway Congress for January, 1905. A similar car was being used in Portugal in 1907.

I am, Sir,
Yours faithfully,
GEORGE L. BOAG

[We reproduce on page 1028 a photograph sent by our correspondent of one of these early railcars.—ED. *R.G.*]

Antiquated Customs Examination

December 17

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The improvements in passenger accommodation at the port of Southampton no doubt justify the eulogiums dedicated to the Southern Railway by your contributor Mr. Arthurton, in THE RAILWAY GAZETTE of November 23. Unfortunately the efforts of the Southern Company at that and other South Coast ports are largely nullified by the antiquated arrangements still in force for customs examinations of hand luggage. Whether the railway company is responsible or not, it is only a partial alleviation of the discomforts of the dreaded Channel crossing to improve waiting room and train accommodation, if the weary passengers are to be submitted to the vexatious and impertinent customs examination in places such as the wire cage at Dover, or the murky bench on the wharf at Folkestone, where the arriving passenger, still feeling the effects of the motion of the Channel steamer, is treated like a potential criminal.

When, Sir, we shall have an Amalgamated Transport Service, such as is dreamt of, and so humorously described by another of your contributors, passengers entering the country will no doubt be welcomed and not repelled at the ports, and if the new regime, under a National Dividend Renaissance, still requires import duties, we shall all pay a small fee per head, to cover such personal possessions as "Watches and Clocks, new or old" and messieurs the customs sleuths will be engaged tracking professional smugglers, instead of rummaging through the carefully packed intimate belongings of the innocent traveller.

I am, Sir,
Yours faithfully,
VIAJERO

Diesel or Steam Engine

The following letter to the Editor of *The Times* appeared on Friday last:—

The British Railway Stockholders' Union
Limited, 25, Victoria Street, S.W.1.

SIR,—Writing solely from the point of view of the stockholder in British railways, may I express the hope that the magnificent feat of covering 185·8 miles in 151 min. 56 sec. recently accomplished by an L.N.E.R. steam locomotive will not be used as propaganda against the possibilities of the diesel railcar? To compare an exceptional performance, involving an unknown cost, to the detriment of a run performed daily as part of a normal train service is simply misleading.

It is quite legitimate for us to express our satisfaction at the fact that a steam locomotive, after running four miles down a bank of 1 in 200, attained a speed of 100 miles an hour over a distance of 600 yards, but without making ourselves ridiculous we cannot compare such a performance with that of the Flying Hamburger, which frequently averages 101 miles an hour from Naustadt to Brieselang for 30½ miles on end. (Those who are interested will find a valuable analysis of the run in the supplement to THE RAILWAY GAZETTE of October 5 last.) What the diesel car could achieve in the matter of mere speed, if the track permitted and the effort were made, we none of us know.

It is, I think, similarly regrettable when advocates of the diesel engine accept the challenge and hold out astonishing claims, which may or may not be realised. The oil-electric engine is a new factor in transport, and the reasonable man only asks that it shall be fairly tested and made use of wherever it can be used to advantage. In short, what is required by the British railways in this connection is experience, and that, I hope, they will secure in due course from the cars with which they are providing themselves.

It is not a feasible proposition to run trains averaging 100 miles an hour over tracks suited to the ordinary requirements of the timetable. We must not, therefore, jump to rash conclusions. On two points, however, we should all be unanimous—that we have every right to be proud of the British steam locomotive, which clearly still holds something in reserve, and that the L.N.E.R., by its splendid enterprise, has given the British railways the most valuable advertisement they have had for very many years.

I am, yours very truly,
ASHLEY BROWN,
General Secretary

RAILWAY BENEVOLENT INSTITUTION.—The New Year's Day collection in aid of the funds of the Railway Benevolent Institution will be made on Tuesday, January 1, 1935, at all stations in Great Britain and Ireland. The collection is on behalf of the casualty and general funds. The number of railway employees who became members of this year's casualty fund was 162,742, and assistance has been rendered to no fewer than 121 widows of men killed, 654 widows of men dying from illness and 4,608 men accidentally injured, making a total of 5,383 cases relieved, being one in every 30 contributors. Contributions will be thankfully received by any stationmaster or goods agent, or by the General Secretary, 23, Gordon Square, W.C.1.

PUBLICATIONS RECEIVED

Organisation und Durchführung des Betriebsdienstes und Verkehrsdienstes bei der Deutschen Reichsbahn. (Organisation and Working of the Traffic and Commercial Services on the German State Railway.) By Dr.-Ing.e.h. M. Leibbrand and Dr. jur. H. Domsch. Berlin: Verkehrswissenschaftlichen Lehrmittelgesellschaft m.bH. 102 pp. Price RM. 3·65.—These two lectures are included in a course given annually under the auspices of the German State Railway as part of the technical educational work which has been so extensively developed by the management in recent years. Both lectures are very clear and follow sound lines of argument. There are several interesting diagrams which add much to the value of the booklet. The organisation adopted for the traffic and commercial services of the Reichsbahn, which differs from that found in other countries in some important particulars, is concisely described. Particulars relating to classes of traffic, fares, and so forth, are given. A particularly instructive diagram is that showing how the timetables are arranged year by year and how the seasonal changes are introduced. A comparison between the Reichsbahn organisation and that adopted on some foreign railway systems is also given. The booklet makes very interesting reading.

Communications in the Far East. By F. V. De Fellner. London: P. S. King & Son Ltd., Orchard House, 14, Great Smith Street, S.W.1. 8¾ in. × 5¾ in. × 1½ in. 352 pp. and index. Price 15s. net.—This is a remarkable volume covering so vast an amount of ground that detailed comment is scarcely possible and only an outline of its contents can be given. It is, however, interestingly written and contains much useful information, even if this is not always quite up to date. We agree with the author's final forecast, which stresses the need in China, as in no other country in the world, for widespread railway expansion. As this expansion is likely to involve the purchase from abroad of increasingly large quantities of railway equipment in the future, we think that many of our readers may like to study this volume if they wish to realise conditions for which such equipment is required.

The book is divided into three parts: Part I is the foundation upon which the others are built, and comprises instructive chapters on the geographical, geological and other natural considerations, and economic conditions in the Far East. The present state of imports and exports and overseas and foreign passenger traffic also forms a useful introductory of what follows. Part II deals with internal, and Part III with external communications. Special interest attaches to the first three chapters of Part II, which describe (1) Japanese and Korean, (2) Manchurian, and (3) Chinese railways. The former combines an historic review with that of the financial, administrative, and statistical side of Japanese and Colonial railway working. Noteworthy features are the efficient maintenance of rolling stock, multiplicity of ferries, electrification, state and private ownership, and finally earnings. Chapter II opens with the relative values of Japanese, Chinese and Soviet interests in the Manchurian systems and passes on to operating results. Chapter III gives an historical outline and summary of the general situation on the Chinese lines, including such subjects as State management, descriptions of the more important railways, administrative difficulties in the way of development, and the urgent need for expansion. Foreign-promoted lines as well as Chinese-owned lines in Manchukuo and Jehol are also described. Notes on coastal and river shipping competition follow, and finally, the important subject of the financing of railways in China and mention of the Boxer Indemnity Fund complete Part II.

The remainder of the volume is devoted both to Japanese and Chinese maritime and inland shipping and also foreign shipping, to roads, ports and telegraphs, and urban communications. Under the heading of external communications are to be found the Trans-Siberian Railway and various maritime routes. The forecast already mentioned forms the finale to this important work.

An Electrical Adventure. By Peggy Scott. London: Ivor Nicholson & Watson Limited, 44, Essex Street, W.C.2. 8½ in. × 5½ in. 119 pp. Illustrated. Price 2s. 6d. net.—There was a time when the domestic use of electricity was trammelled by the superstition of the housewife. Impressed by the mysteries of this source of power, she set it down as something liable to explode without notice and, not unwisely in these circumstances, left its potentialities to be explored by the readily replaceable male. Such was the attitude which the Electrical Association for Women set out to combat in 1924. Ten years of achievement in the field of extending the applications of electricity to the purposes of the home, thereby relieving women from the domestic drudgery which the author picturesquely describes as "the curse the Serpent laid upon them," make an impressive story, the effect of which is heightened by the writer's evident vigour and faith. Electricity is too readily taken for granted. The fortunate ones whose means enable them to acquire each new invention as it appears, overlook the many to whom electric power is still regarded as primarily a source of light, and are discouraged for fear of expense from drawing upon its resources in other ways. It is to carry the message and stimulate the demand throughout all classes that the Electrical Association for Women was formed, originally as an offshoot of the Women's Engineering Society, then blessed with a farsighted secretary in the person of Miss Caroline Haslett. Miss Haslett recognised that few women could hope to make headway in heavy engineering, but saw that the flexibility and cleanliness of electricity made it an eminently suitable and practical form of science for them to assist in developing. Miss Haslett is now Director of the Electrical Association for Women, in which capacity her achievement has been not only one of assistance to producers and users of electrical equipment, but to women in general as a means of opening up new careers.

Pin-Type Insulators and Spindles.—The pin-type insulators and spindles described in this catalogue of Bullers Limited, 6, Laurence Pountney Hill, E.C.4, are designed for working voltages up to 66 kV. A variety of designs is available in the different capacities, the selection of which for service und r particular atmospheric and other conditions is assisted by notes in the text. The standard tests on which the specifications of the insulators are based are described in the introduction. The firm has a long experience in the manufacture of this apparatus and the combination of qualities exhibited in the insulators is the result of extensive practical experiment.

Bakelite Progress.—This is an annual publication of Bakelite Limited, 68, Victoria Street, S.W.1. The latest applications of the material, ranging from domestic purposes such as the manufacture of ash trays (exemplified in a striking coloured cover) to large mouldings for furniture and industrial requirements, are described in illustrated articles and notes. The hard wearing qualities of Trefoil bakelite silent gear material are apparent in the illustrations of pinions made by this process which have been in use for a number of years in rolling mills and high-speed grinders, resulting in economy on replacements and a better standard of work from the operators in consequence of the suppression of undue noise and vibration. Bakelite paints and varnishes are further products which will commend themselves to industrial users on account of their rapid drying qualities and resistance to climate and corrosion. In every illustration in the booklet there is apparent a graceful simplicity of design which is entirely in harmony with the best current taste and happily removed from the bleak angularity which sometimes characterises the work of earnest but misguided modernists. In its combination of many practical advantages with a fluid adaptability to the artist's will, bakelite possesses a potent argument for its wide use at the present time.

THE SCRAP HEAD

Every tenth German earns his living in working for the German State Railway, according to a statement made during the eleventh railway week held in Berlin last month.

* * *

WANDERLUST

However grey the skies may be,
I sometimes like a mirage see
The long sleek coaches of the Wagons-Lits
That wait the traveller on Calais quay.

—Mr. Kenneth Brown, President of the Railway Club, at the club annual dinner on Friday last.

* * *

THE RETORT DISCOURTEOUS

That railways had some able champions at the Parliamentary Bar in the days when they were meeting with opposition is evident from the following anecdote told by a correspondent in the *Sunday Times*. In the neighbourhood of 1865, when Mr. H. A. Merewether, Q.C., was defending the construction of a proposed line in Wales, he was asked by opposing counsel what he would do, in the event of the Bill being passed, with the rivers and rocks which blocked the route. "I should dam the rivers and blast the rocks," retorted Mr. Merewether swiftly.

* * *

HIGH-SPEED GOODS WORKING

In a letter to the staff magazine of the Southern Railway, Mr. E. H. Phillips, Stationmaster, Mottingham, gives the following example of quick work: "Trucks Nos. 43936 and 123214 were cleared here on October 9 and despatched at 8.34 p.m., labelled empty to Faversham. These same two trucks were received back here at 8.30 a.m. on October 13, loaded with bricks from Fletton, L.N.E.R., label: '11/10/34 ex Fletton.'"

* * *

THE SPANISH THUNDERCLOUD

Writers who venture to ascribe industrial unrest to the machinations of Marxism are more likely to be snubbed in this tolerant age than those who represent the philosopher as the fountain head of wisdom and the source of right thinking. There is peculiar interest, therefore, in the manner in which the views put forward by Mr. George L. Boag in his book "The Railways of Spain" (published 1923) have been vindicated eleven years later by the recent revolution in that country. We reproduce the passage herewith. The fulfilment of the forecast made in the concluding sentence is particularly striking:—

Since the 1916 strike and a recrudescence in 1917 there has been no serious outbreak, although the federation has certainly not been idle. The federation claims that its membership includes nearly all the railwaymen, but this is undoubtedly an exaggeration. It is in close alliance with the main organisation of Spanish workers. Trades unionism in Spain is represented by two main bodies and a number of smaller unions or trade guilds. The General Labour Union (Confederacion General del Trabajó) is frankly Syndicalist and Marxist. Its organisation is on the lines of a secret society and its potential power is probably greater than is suspected. The General Workers' Union (Union General de Trabajadores), on the other hand, is wholly and entirely governed by Socialist doctrines, and its acknowledged head is Pablo Iglesias, who for years was the only Socialist Member of Congress. To this body the Railwaymen's Federation is allied. To recent activities of the General Workers' Union may be attributed the recent strike of the Barcelona Light and Traction Companies' men in Barcelona, in which the men left their work and nearly stopped the whole life of the city for a week, returned to work with certain concessions, and then struck again, apparently without reason. The truth is probably that the union is simply inducing these partial strikes in order to feel its way and train its members, and that immediate partial results are considered as unimportant in comparison with the valuable lessons learned, to be applied when the day arrives for a final demonstration in force. This may be an exaggerated theory, but all the evidence goes to show that there is an organisation working secretly, with its centre in Barcelona, and with or without international affinities which will, at some future date, tax all the resources of the country to keep from causing revolution, not only in the political but in the economic life of the country.

North Western of Austria Railway.

ONLY SLEEPING-CAR ROUTE BETWEEN GERMANY AND AUSTRIA, HAMBURG, BERLIN, DRESDEN, AND PRAGUE,

TO VIENNA.

From Hamburg, via Stendal, Röderau, Riesa, Dresden, Lissa, Kolin, Deutschbrod, and Znaim.

From Berlin, via Röderau, Riesa (here joining mail from Hamburg), Dresden, Lissa, Kolin, Deutschbrod, and Znaim.

From Dresden, via Lissa, Kolin, Deutschbrod, and Znaim.

From Prague (joining the train at Lissa junction), via Lissa, Kolin, Deutschbrod, and Znaim.

TIME AND FARES.

(Exclusive of first-class railway fare.)

From ***Hamburg to Vienna,*** 21 h. 29 m., 16 marks; ***Berlin to Vienna,*** 15 h. 12 m., 12 marks; ***Dresden to Vienna,*** 11 h. 44 m., 6 marks.

TELEGRAPHING FOR BERTHS.

From Leipzig telegraph to Dresden, and join the train there; from Prague telegraph to Dresden, and join the train at Lissa.

HOURS OF DEPARTURE.

From Vienna for the North at 8.30 P.M.; leave Hamburg for South at 11 A.M.; leave Berlin at 5.17 P.M.; leave Dresden at 8.45 P.M.; leave Prague at 11 P.M.

See map and text.

N. B.—Further information supplied on addressing station masters, or the

DIRECTION DER

K. K. PRIV. OESTERR. NORDWESTBAHN, VIENNA.

FORTY YEARS AGO—An old North Western of Austria Railway advertisement of sleeping-car trains between Germany and Austria, reproduced from an American travellers' guide of 1894

OVERSEAS RAILWAY AFFAIRS

(*From our special correspondents*)

Modern equipment on South African Airways—Argentine railway cruising trains—Rail and road co-ordination and railway reorganisation in Switzerland—ENIT absorbed by Italian Propaganda Department—New trunk route in U.S.S.R.—Preparations for New Zealand Royal visit

SOUTH AFRICA

New Planes for Union Air Services

The *Jan van Riebeeck*, the first of the new fast Junkers aeroplanes that are to speed up the Union's air services, arrived this week at the Cape Town airport from Durban, having made the trip in the net flying time of 6¼ hours, which constitutes a record. The *Jan van Riebeeck* is one of three Junkers machines purchased by the railway administration in pursuance of the policy of making South African Airways services as swift and as safe as possible. The other two machines are named the *Simon van der Stel* and the *Lord Charles Somerset*, all after the early Governors of the Cape Colony.

These machines incorporate all the latest inventions calculated to ensure safe travelling, and have each three 600-h.p. engines, any two of which can carry the maximum load. These engines are Pratt & Whitney Hornets of American manufacture. Each machine is capable of carrying 17 passengers, with ample accommodation for mails and baggage. The maximum speed is 182 m.p.h., with a cruising speed of 150 m.p.h. One of the most striking of the many safety devices employed in these machines is the automatic pilot and gyro-compass. The pilot has merely to set his course by means of the gyro-compass, place the automatic pilot in operation, and leave the plane to fly itself. Each machine is equipped with a radio receiving and transmitting set. The interior fittings are lavishly contrived with every comfort for passengers, including the pleasure of being able to smoke.

Nyhoff Harbour Commission

The Nyhoff Harbour Commission has now presented its report to Government. From unofficial sources it is learned that one of its recommendations is that the Union harbours should have greater independence, and that shipping affairs should in future be less dictated by the railways policy. Separation of the harbours from the railways administration is not, however, recommended. Another suggestion made by the Commission is that railway rates between Durban, the principal goods port of the Union, and the Rand, its main industrial centre, should be reduced as far as possible and that harbour charges also should be lower. The bulk of the report is devoted to detail improvements at the various ports. Reorganisation to diminish operating costs is advocated to make the spending of new capital on these improvements possible. Programmes for the immediate and more remote future administration and improvement of the harbours are dealt with separately.

The New Mozambique Treaty

As published in the News columns of THE RAILWAY GAZETTE of November 23, the revision of the terms of the Mozambique Convention removes anomalies previously existing in the railway section of the Convention. In continuation of the information so published, it may be added that one of the articles states that all matters affecting railways and harbours not provided for in the Convention shall form the subjects of a working agreement, binding upon both Governments, between the two railway administrations represented by the General Manager of the South African Railways and Harbours on the one side, and by the Director of the Mozambique Convention on the other. Any alteration of the agreement shall require the consent of the Minister of Railways and Harbours of the Union and the Governor-General of Mozambique, as the respective heads of the two administrations.

ARGENTINA

Eucharistic Congress in Buenos Aires: Record Passenger Traffic

The 32nd International Eucharistic Congress, held in Buenos Aires from October 10 to 14, was responsible for the largest influx since the British Empire Trade Exhibition in 1931, of visitors from the interior of the country and the neighbouring republics, as well as from overseas. Most of the companies ran very cheap special excursions, in addition to offering reduced fares by ordinary trains, the conditions and availability of these facilities being made as attractive and convenient as possible. There is no doubt that the majority of the railways were well rewarded for their enterprise in this direction, and in one or two cases all previous excursion records were easily surpassed. The following table gives the number of passengers conveyed by special trains during the period in question:—

	Number of special trains	Number of passengers
Central Argentine	59	29,155
B.A.G.S.	15	10,458
B.A. & Pacific (including 5 from Chile)	18	8,400
Entre Rios & N.E. Argentine	4	2,898
B.A. Western	6	2,400

These figures refer only to the passengers conveyed by special trains over the main lines, and do not include the returns of the ordinary main line and suburban services, which were also extremely heavy, especially on the Central Argentine and Pacific Railways, each of which has a suburban station situated a short distance from the scene of the ceremonies, Hipódromo on the C.A., and Palermo on the Pacific. The Anglo-Argentine Tramways also benefited by the influx of Congress visitors; 7,040,228 passengers were transported over the company's surface and underground lines between October 9 and 14, both dates inclusive.

Train Cruising in Argentina

During the month of November, the B.A. & Pacific Railway organised another train cruise similar to last year's, the itinerary including the principal beauty spots and places of interest in the Andine provinces. The train—known as El Crucero—had accommodation for 70 passengers, and was equipped with restaurant and Pullman cars (one of the latter being arranged for dancing and provided with an orchestra and radio installation), a reading-room, writing-room, information bureau, bookstall, a barber's shop for ladies and gentlemen, and hot and cold baths. The train, which was visited by the President of the Republic before its departure, left Buenos Aires on November 10, and the tour, which lasted 9 days and covered about 2,000 miles, included visits to San Rafael, Mendoza, San Juan, San Luis, Villavicencio, Villa Dolores, Yacanto and Mina Clavero. Motorcar excursions were made to places of interest off the railway, and opportunities were provided for golf, tennis, riding, &c. One night was spent in an hotel in Mendoza, and another in the company's hotel at Yacanto. The price of tickets for adults was $340.00 paper, and for children $250.00.

B.A. Branch of the Institution of Mechanical Engineers

On November 8, the annual meeting of the Buenos Aires branch of the Institution of Mechanical Engineers (London) was held on board the Royal Mail liner *Asturias*. Mr. S. H. Pinsent (chairman of the branch) presided. After the report of the hon. secretary on the year's work and the balance sheet had been duly submitted to the

meeting and passed, the election of officers for the ensuing year was proceeded with. Mr. A. T. Nickson was elected chairman for 1935; Mr. W. H. T. Harvey was re-elected hon. secretary, and Messrs. G. de Bourbel, A. E. Livock and J. W. H. Rea were re-elected members of the committee.

SWITZERLAND

Reorganisation and Financial Reconstruction of the Swiss Railways

In a message of the Federal Council submitting to the Federal Assembly a draft Bill of the project for the reorganisation and financial reconstruction of the Federal Railways, are to be found the following references to the actual railway debt and the reduction in administrative expenditure. While advocating the introduction of certain temporary measures for the carrying out of the proposed reforms, the message stresses the urgency of a thorough reorganisation, the necessity for which becomes more apparent each day as the working deficit of the Federal Railways continues to rise. The railway debt grows heavier every year by some 85 million frs. and will exceed 3 milliard one hundred million francs by the end of 1934. Receipts are now falling steadily, whilst working expenditure—in spite of the cuts in salaries resultant from the measures taken in October, 1933—shows no corresponding decline.

Causes of the Federal Railways' Debt

The message further states that the main causes of this unfavourable financial situation of the Federal Railways are to be found in such external factors as economic world depression, trade restrictions and foreign exchange difficulties, with the attendant diminution in general traffic, to which must be added difficulties of an internal character, such as the heavy indebtedness of the railways and the radical changes that have taken place in recent years within the transport industry as a direct consequence of the steady development of road traffic.

There can, of course, be no question of any increase in railway rates, which are already far too high and exercise an adverse influence on the economic life of the country, and it is suggested that efforts be made to reduce them. Moreover, it is urged that the railways should do all in their power to adapt themselves to present economic conditions and strive to cut down expenditure as far as possible. Energetic steps have, it is true, already been taken by the Board of Administration in this direction, but, although the results achieved up to the present are satisfactory, this does not suffice. From 1931 to 1933 it has proved possible to reduce working expenditure from 283,300,000 to 259,900,000 frs. Expenditure for construction and renewal work has been brought down from 94,608,000 frs. in 1931 to 41,875,000 frs. in 1933. It is estimated that the 1934 figure will not exceed 40,500,000 frs., whilst that for 1935 is budgetted at 35,600,000 frs.

Rail and Road Co-ordination

The message points out that before proceeding to draw up a scheme for the reorganisation of the railways it was necessary to put a stop to the chaotic conditions prevailing in the entire transport industry, due principally to unrestrained competition on the part of motor carriers, which were slowly but surely leading both rail and road interests to ruin. The Bill recently passed by the Federal Assembly regarding the co-ordination of rail and road traffic should, it is hoped, prove instrumental in solving these difficult problems to the satisfaction of both parties concerned.

The scheme under consideration is both important and comprehensive, involving, not a simple administrative change, but a drastic reorganisation of the very constitution of the railways, both jurisdictional and financial, especially as regards the commercial and technical adaptation of the Federal transport undertaking to the new conditions.

ITALY

Truck-Load Rates for Multiple Destinations

The State Railways administration has introduced a noteworthy facility for the transport of fresh fruit and vegetables in small quantities. In future full trucks will be accepted at the special truck rate for two or three destinations on the same line. Hitherto truck loads or groupage trucks were accepted only for one destination under this tariff. The new concession is particularly important for small centres which cannot absorb full truck loads.

The Propaganda Department Absorbs Tourism

The Cabinet has decided to transfer the functions of the Commissary for Tourism to the recently created Department of the Under-Secretary of State for Propaganda. Consequently the ENIT (National Tourist Board) also passes under that authority. A special sub-department has been created for the purpose under a Director-General for Tourism, and Signor Bonomi, a member of Parliament, has been appointed to fill this important position.

Flood Damages in Southern Italy

During the first week in November torrential rains in the south of Italy played havoc on the Rome-Naples Direttissima, and it was necessary to run the trains over the old line via Cassino. Near Cisterna the main canal which cuts through the reclaimed Pontine marshes overflowed its banks and flooded the station, causing part of the embankment to slip. Also at Formia the passage of a heavy goods train was responsible for the settlement of the permanent way which had been under water for a whole day. As the train was proceeding very slowly not much damage was done, and only the engine and tender came off the rails. The whole service was, however, restored within 24 hours. In other parts of the south also considerable damage to the various lines was done by the floods.

New Coaching Stock Livery

At the Milan Fair, last spring, two specially painted passenger coaches were on view in the State Railways pavilion. The lower part of the coaches from the waist-line downwards was painted in chestnut brown and the upper part yellow. Italian passenger coaches have hitherto been painted dark green, which very quickly blackened. The brown and yellow have since been in regular service on the Milan-Rome expresses together with the dark green coaches for the purpose of comparing the behaviour of the two colours and of testing the new colours under working conditions. The results of these tests have apparently been such as to warrant the adoption of the new colour scheme. Not only do the new colours not take up the dirt and smoke in the same way as the dark green, but it is also a matter of economic convenience to introduce the new colours, as these can be manufactured in Italy. Since the beginning of November the Milan-Genoa and Milan-Turin expresses have been running in the new brown and yellow livery.

BRAZIL

Central of Rio Grande do Norte

The administration of this Government railway has lately been receiving the close attention of the Federal authorities, with the result that a surplus will, in all probability, be recorded on the current year's working, in contrast with the deficits which, although lessening year by year, have persisted hitherto.

At present the total extent of the system, which starts from Natal, the capital of the State of Rio Grande do Norte, and ends in Angicos, with a 27-km. branch from Lages to Epitacio Pessoa, is only 221 km., but the Government intends ultimately to extend the main line to Caicó, a distance of 143 km., in the extreme south-west corner of the State and in country admirably suitable for cotton-growing: on 45 km. of this extension a certain amount of work has already been done. The branch-line to Epitacio Pessoa is also to be extended to the port of Macau on the north coast of the State, where the principal business is salt-refining.

Adjustments in fares and in rates on parcels and merchandise (chiefly of cereals and sugar-cane) to combat road-competition have been carried out dur-

ing recent years, and this policy has undoubtedly resulted in a greater rail tonnage and in the gradual improvement in receipts. Figures relating to quantities and tonnages carried in the years 1931-33 are given below:—

	1931	1932	1933
Passenger-kilometres	2,422,936	2,812,031	3,842,854
Parcels and luggage (ton-kilometres)	16,628	15,355	29,491
Livestock-kilometres	22,603	43,078	44,309
Goods (ton-kilometres)	2,099,860	2,064,990	2,668,990

It may also be noted that the passenger, parcels, and goods figures for 1933 are all better than those for 1929—the year immediately preceding the industrial crisis.

São Paulo Railway

The following are some of the more important statistics referring to this railway in the financial year ended December 31, 1933:—

Gross receipts	92,393	contos
Expenditure	66,900	,,
"Net" receipts	25,493	,,
Operating ratio	72·4	per cent.

Of the above receipts merchandise traffic accounted for 66,852 contos, and passenger bookings for 12,193 contos. As regards tonnages and quantities, the following table gives the principal movement:—

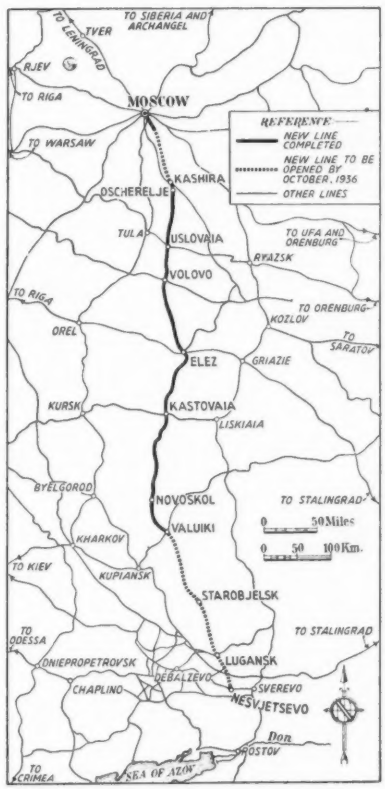
Passengers (No.)	10,567,850	
Luggage and Parcels	76,837	tons
Goods	4,060,929	,,
Livestock (head)	134,177	

U.S.S.R.

Moscow—Don Basin Line

The substructural work on the Valuiki-Oscherelje section of the Moscow-Donbass trunk line has been completed, and the rails have been laid for 446 km. The rails for the remaining section were due in October, but delivery will not be completed until early next year, by which time it is anticipated that the next 100 km. from Oscherelje to Birjulero (near Moscow) will be ready for platelaying. Much work still remains to be done south of Valuiki, and the opening of the whole line has now been planned for October 1, 1936.

The construction of this double-track trunk line was undertaken because of the overloading of the Poposnaia-Valuiki-Elez-Kashira, Rostov-Liski-Rjasan-Moscow, and Rostov-Kharkov-Kursk-Moscow lines, following the industrialisation of the Don Basin. Much of the line is entirely new, but certain parts have been realigned, doubled, and generally modernised; the ruling grade will be 0·56 per cent. compared with grades on existing sections of 0·92 and 1·16 per cent., which now necessitate 10 per cent. of the trains being double-headed. For the through coal trains, the new standard 2-10-2 FD (Felix Dserschinski) class with an axle load of 20 tonnes will be used, but it is intended eventually to electrify the line from Moscow to Volovo, 280 km. The total cost of construction was originally budgeted as 147,000,000 roubles, but was later raised to 278,000,000 roubles, and is now reported to be about 430,000,000 roubles. According to the second Five Year Plan, the north-bound goods traffic in 1937 will amount to 10,250,000



Sketch map of the new Moscow-Donbass trunk line

tonnes from the Don Basin to Oscherelje, and over 12,000,000 tonnes from Oscherelje to Moscow; in the south-bound direction, the traffic in returning empties is estimated at 2,500,000 tonnes. Automatic block signalling is to be applied to 400 route km. and ordinary block apparatus to 523 route km. The total length of the line from Nesvjetevo, near Rostov, to Moscow is 1,100 km.

NEW ZEALAND

Wellington New Terminal Works

Of the £3 million involved in providing Wellington with a new station and yards, and with a grade, curve and distance-saving deviation, via Tawa Flat, some £150,000 have been spent by the Public Works Department or the new terminal facilities during the past twelve months. The whole work, including the electrification to Paekakariki (27 miles) is expected to be open for traffic well within three years. The storm-water drainage, excavations and foundations of the new stations have now been completed, and the steel frame is well advanced.

[As is described on page 1040 in our News columns, one of the principal functions of the Duke of Gloucester's visit to New Zealand was his laying of the foundation stone of the new Wellington station.—ED. *R.G.*]

The North Island Royal Train

The Otahuhu (Auckland) railway workshops have been busy constructing a new Royal car and making renovations and alterations to several other coaches in readiness for the visit of the Duke of Gloucester, who arrived on December 15. Nine coaches will make up the Royal train for service in the North Island. The Royal car is 55 ft. in length, the principal compartment being a lounge about 20 ft. long. This is furnished with a built-in sideboard and cabinets, and a suite comprising a settee and divan chairs. The appointments, with the exception of the upholstered suite and carpet, have all been made at the workshops. There are two staterooms and a sleeping compartment, with four berths for personal attendants. The whole of the interior woodwork is of mahogany.

The Chairman of the Government Railways Board has stated that while it was hoped to make the new car a credit to the department's organisation, all undue expense both in the construction and equipment of this and other cars required for the Royal visit has been strictly avoided.

Dining Car Appointments

One of the latest type main trunk cars has been re-modelled, and furnished with three tables and necessary appointments, with a storeroom adjoining, for use as the dining car in the Duke's train. A kitchen-car has also been converted from an ordinary main trunk passenger car, and five other cars have been renovated to adapt them for service in the Royal train. Among these will be the car used by the Duke and Duchess of York on their visit to the Dominion. Since then it has been in use for special tourist traffic.

A car has also been converted for the use of members of the Railways Board. This comprises a lounge, two two-berth and one four-berth sleeping cabins, a kitchenette and offices, including hot and cold showers. Two sleeping cars and others for the carriage of personal effects and luggage have also been overhauled to complete the train. The coaches being constructed and renovated will be used as special cars at the conclusion of the Duke's visit. Somewhat similar arrangements are in hand at the Addington (Christchurch) workshops for the Royal train to be run in the South Island.

IMPRESSIONS OF OVERSEAS TRANSPORT

V—Agricultural Canada seen from the observation car of the Continental Limited

By A. W. ARTHURTON, formerly Secretary, British Railways Press Bureau

THE Continental Limited of the Canadian National Railways runs across the continent from Montreal to Vancouver, 2,977 miles, in 89 hr. 5 min. Leaving Bonaventure station, Montreal, each day at 7.30 p.m., it arrives on the Pacific coast at 9.10 a.m., four days later. We joined it at Winnipeg at 9.30 a.m. on Saturday, having left Chicago at 10.30 p.m. Thursday night.

The equipment of this famous all-steel train is different on various sections of the journey, but in all includes sleeping cars (sections, drawing rooms and compartments), tourist sleeping car, diners, a first-class coach, and a colonist car with lunch counter service and a place where passengers can cook their own meals, together with a combined compartment. There is also an observation library and buffet car. From the last-named, with its open platform at the rear of the train, the best view of the country is obtainable.

From Winnipeg through Manitoba, some 400 miles, wheat lands predominate. They extend for hundreds of miles on each side of the railway, interspersed with patches of dwarf poplars, scrub and small firs. The poplars, bare of leaves, present a strange appearance, especially in the moonlight, as the trunks are white like silver birch. Here and there are huge depressions in the ground which look like dried-up lakes. The soil is quite black as in the fen country at home, and very fertile, but millions of acres still await settlers and cultivation. There are no stacks round the farms, but large mounds of straw here and there on the unfenced fields seem to suggest that they are left where the corn is threshed to form a shelter from the wind and fodder for the small number of cattle visible.

Passing Paddington

Soon after leaving Winnipeg we pass Paddington, a small station on the prairie, which scarcely reminds one except by name of the other Paddington. Freight trains consisting of box cars of 40-tons capacity, loaded with wheat, stand on running loops every few miles waiting for us to pass, and one sees the huge freight locomotive with its long string of cars draw on to the track behind us, its smoke remaining visible for many miles until it sinks below the horizon. The track is single over the greater portion of the route, strong, well laid and smooth riding, the rails being spiked to the ties or sleepers, and the ballast composed of earth and stones. The trains are heavy, varying from 7 to 22 cars, and the freight trains with their huge cars run to even greater lengths.

The loops, with facing points at each end, are protected by disc red and green lamps on steel standards about 5 ft. in height. The trainmen, of whom there are three besides the enginemen, ride at front and rear (a brakesman with the trainman or guard in front and one brakesman behind) and work the points upon the train entering and leaving the loops. They are responsible for seeing that the points are padlocked for the running line, as there are few signals, even at the stations. At stations, however, where junctions or sidings exist, two signals, one on each side of the same post, move in the upper quadrant, and when at "all clear" form a "U" at the top of the post, falling to the danger position when the train has passed. At some places also, signals working in the lower quadrant are seen.

At intervals along the track are grain towers or elevators, to which the farmer delivers his corn. It is then loaded into freight cars by means of a shute and hauled to the grain ports on the St. Lawrence or the great lakes. The elevators vary in shape and size, some being like small octagonal gas holders painted in red and green, and others oblong in shape and apparently composed of corrugated iron. This year, owing to low prices and the difficulty of disposing of the wheat, the elevators generally are full, awaiting a more propitious time for shipping.

Train Staff

The crew of a passenger train is usually composed of a train conductor and two trainmen, in addition to the sleeping car conductor, the sleeping car attendants (usually negroes) and the baggage man or men. The train conductor is in charge of the train and even of the enginemen, and he also acts as ticket collector. If there are fewer than seven cars on the train, the second trainman is dispensed with. The train crews, I was told, work on mileage and between certain points, and where these work-sections are of great length, as they usually are in this district, they work to and fro between the points and then lie off for two or three days.

Canadian railwaymen's wages were reduced by 15 per cent. in stages in 1931, as against a 10 per cent. cut in the United States. Those in Manitoba also had to make a further 2 per cent. contribution to the State, but according to the *Saskatoon Star and Phœnix*, which was put on board at that town to-night, it is announced that as a result of negotiations between the C.P.R. and C.N.R. and the Trade Unions, 3 per cent. is to be restored on January 1 next and a further 2 per cent. on May 1, leaving a 10 per cent. cut in force. In the United States, it will be remembered, it was agreed to restore 2½ per cent. of the 10 per cent. deduction on October 1, 1934, a further 2½ per cent. on January 1, 1935, and the remaining 5 per cent. on May 1 next.

All through the prairie country the track seen from the end of the train is apparently dead level for hundreds of miles, the rails stretching out in a straight line and meeting on the horizon. Permanent way gangs who have stepped out of the way can be seen resuming their work on the track as soon as the train has passed, while from time to time a ganger or patrol man is seen lifting his bicycle on to the rails and continuing his journey. It is always interesting and unusual to view the track from a new angle, and the impression obtained from the end of a train is very different from that usually received from a carriage window. Farm level crossings are numerous until one gets into the Rockies. On each side of all crossings is a post with a short black board on top, upon which are painted two white eyes like spectacles and the engine driver—or engineer as he is called here—has to sound his whistle on approaching each crossing. Throughout the whole of one night, when passing through Saskatchewan and Alberta, the whistle, which has a mournful note like a fog horn, was being sounded continuously and was anything but conducive to sleep. Cattle crossings are all provided with cattle guards between the rails to prevent the animals wandering on to the line.

Steel girder bridges are thrown across the larger rivers. Timber viaducts, similar to those erected by Brunel in Cornwall and Devon, are also used for crossing streams in the mountain districts.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

London Transport Completed

WITH the taking over on December 5 of eight buses of the Prince Omnibus Co. Ltd., the last of the undertakings scheduled under the London Passenger Transport Act, 1933, passed under the control of the London Passenger Transport Board. Incidentally it is interesting to record that London Transport now has in service 4,823 buses in the Central area, 629 buses on the country services, and 450 Green Line coaches. In addition there are 2,628 tramcars and 63 trolleybuses under its control.

Door to Door in New Zealand

A COMPANY that has just been formed in New Zealand indicates a development which promises to bring about a practical form of co-ordination in providing a door to door service for the collection and delivery of goods. It may be recalled that in THE RAILWAY GAZETTE of September 14 last reference was made to the concession granted to traders of special rate for goods in car-load lots. Only a few of the largest traders were able to take advantage of this concession as the smaller carriers could not collect 8 to 12 tons to make up a car load. The company to which we have referred above has been formed to comprise the carriers in Wellington and Palmerston North, who will perform the work of collecting the goods and delivering them at their destination, so that these local carriers will now be in a position to offer a door-to-door service under a truck rate system which they administer. A similar company is being formed in Otago and others are in contemplation. The co-operative movement is spreading and it is expected that groups of town and country carriers in all parts of the Dominion will band together in order to be in a position to take advantage of these reduced rates. The scheme is not altogether new as it has been in operation in the Wellington-Palmerston North area for sixteen months and the new company will only extend an established service, but in other localities it will be an innovation which it is hoped will prove of benefit to the trading community.

Co-ordination in France

FROM time to time we have recorded the progress made in various parts of France in the co-ordination of rail and road services. Seven regional agreements have now been concluded as follow, the name of the district being followed by that of the railway system affected, the number of lines closed and the total distance. Rouen (Etat) 14 lines, 157 km.; Beauvais (Nord) 6 lines, 220 km.; Niort (Etat) 3 lines, 146 km.; Lille (Nord) 18 lines, 331 km.; Valenciennes (Nord) 9 lines, 175 km.; Besançon (P.L.M.) 7 lines, 228 km.; Chalons (Est) 19 lines, 778 km. On these lines the railway traffic is suspended and automobile services have been organised and co-ordinated with the remaining railway services.

A 4-ton Albion, with end tipping body, recently supplied to the L.M.S.R. engineering dept., Manchester

A Capable Vehicle for Light Loads

The Karrier Bantam chassis is now being used extensively by the British railway companies for collection and delivery work

Two of the Karrier Bantam vehicles in the express parcels service of the Southern Railway

AMONG the types of motor vehicles which have proved exceptionally well suited to the conditions of railway service must be counted the Bantam chassis built in Huddersfield by Karrier Motors Successors Limited. As can be seen from one of our illustrations, depicting such vehicles engaged in the express parcels service of the Southern Railway, they are neat and compact and their general lowness to the ground makes for easy loading and unloading and permits the driver easy access to his seat. Another point is that the driver can enter the van from his cab through a sliding panel door on the near side. The vans weigh under 2 tons unladen and they are designed to carry 2-ton loads.

The Bantam chassis employed for this work is the standard production shown in the other illustration. It is fitted with a four cylinder side valve engine which, while it is rated at 13·95 h.p., will develop 44 h.p. The welded frame is straight, both in plan and elevation, and, carried on 25-in. by 6-in. pneumatic tyres, the laden height is only 22-in. from the ground. A special point is the handiness of the vehicle, brought about by the wheelbase of 8-ft. which permits a turning circle of only 28-ft. while there is a space 11-ft. 8-in. in length which allows of a commodious body being fitted. On account of the low loading line it is possible to fit a body giving headroom of 6 ft., enabling the vanboy to sort the parcels and goods without discomfort, as the vehicle is proceeding on its round, so that they are ready to hand when required. The Southern Railway vans are attractively finished in two shades of green and white, poster panels being arranged at the rearward portion of each side. Similar vans are also being employed by the L.M.S.R.

A view of the Karrier Bantam chassis which explains how it is possible to arrange for a low-loading commodious body

Road and Rail Overseas

Some examples of the way in which motor vehicles are being used in conjunction with railways in various parts of the British Empire

FROM a study of the various reports on the working of railways in different parts of the world it is instructive to see how motor vehicles are being used to complete and round off the transport facilities provided by the railway. The assistance rendered in this way is by no means stereotyped for what is useful in one place does not meet the case in another. There are examples, such as those in South Africa and Rhodesia, where the services link up outlying places with the railway, while in India a new service has been started to link up two railway systems. The adoption of a centralised system of maintenance and control of all railway motor vehicles in New South Wales is a move which will be watched with interest by other authorities.

NEW SOUTH WALES

The report of the Commissioner for Railways for the year ended June 30 last mentions that, during that period, a scheme for a central control of the railway fleet of road motor vehicles was completed. Hitherto the control was with the various branches to which the vehicles had been issued, who made their own arrangements for repairs and maintenance. Experience showed that this arrangement was far from satisfactory; it was not conducive to efficient supervision, repair work was carried out at many different points and not always by mechanics who had experience or training in motor work. As a consequence waste of time, material, and staff made repair costs unnecessarily high.

A central motor garage, designed on modern lines and fully equipped, was therefore established on railway property in the vicinity of Darling Harbour at Sydney. It is under the supervision of an officer attached to the Secretariat and a modern costing system was installed to ensure against losses and leakages. From August 21, 1933, this section has undertaken the whole of the repairs to, and maintenance of, road motor vehicles, as well as co-ordinating and controlling the use of them, throughout the service. It is stated that the policy, in addition to effecting great economies in the cost of overhauls, has resulted in vastly improving the quality of the work turned out.

Incidentally the report states that since the introduction of the scheme for house to house removals, in 1930, it has been largely patronised and, in the year under review, 1,625 removals were undertaken for a freight return of £20,000 and there is a definite increase in this class of work. There has been some criticisms by competitors but inquiries have revealed that the complaints were not well-founded and " a complete vindication of the efficiency of the service given and refutation of these unwarranted statements is found in the very remarkable growth of the business, as well as in the letters of appreciation received almost daily from satisfied clients."

VICTORIA

In the report of the Commissioners for Railways in the adjoining state of Victoria it is pointed out that although the four motorbus services, co-ordinated with the train services, in districts to the east of Melbourne all operated at a loss, they are valuable feeders to the railway system and in some cases enable savings to be made in train operation. The accounts show that the revenue from these passenger services amounted to £6,486 10s. 2d. and there was a loss of £4,219 3s. 11d. In that connection it is pointed out that, as in previous years, " the great bulk of the recorded loss on the passenger services occurred on the East Camberwell - East Kew route which cannot be expected to produce a satisfactory result in the accounts, as the great majority of the passengers travel on 'through' fares. Nevertheless the recorded loss was £1,400 less than in the preceding year, and showed a vast

Decorations to mark the opening of a new motorbus service by the South African Railways in Swaziland

improvement upon what it was costing to maintain the rail service which the bus service displaced and supplemented."

It is also pointed out that the accounts were adversely affected by the number of major overhauls and repairs, causing them to be loaded with a disproportionate amount in this respect. The figure shown for "Repairs, renewals, tools, &c.," is £4,262 13s. 4d.

The activities of the departmental road motor goods service include:—the route between Melbourne and Geelong; collection and delivery at Geelong; sundry services, including the carriage of butter from the cool stores to the ship's side; the transfer of less-than-car-loads of freight between Melbourne and various suburban destinations; and domestic services. These resulted in a revenue amounting to £12,903 2s. 5d. and the profit was £3,276 12s. 9d. The amount charged to the public goods service for repairs and renewals was £2,541 17s. 11d.

PALESTINE

In the report of the General Manager of the Palestine Railways and operated lines for the year ended March 31, 1934, it is noted that road services had been instituted between the station of Ras El Ein and the towns of Petah Tiqva, Tel Aviv, and Jaffa, and between Lydda station and Jerusalem. The road services are operated by contractors. "The service from Ras El Ein has been very successful, but the Lydda-Jerusalem service is capable of better organisation and operation."

The arrangements for the through service by rail from Egypt to Haifa and by road from Haifa to Syria were continued, but the number of passengers, which had declined from 7,232 in 1931 to 6,929 in 1932, fell further to 5,979. This is attributed partly to greater competition by sea and to the need for improvement in the road portion of the service, and representations have been made in this connection to the operators.

One paragraph notes that, with the increase of traffic and in the use of wheeled transport for the conveyance of goods to and from railway stations, the need for good roads at the stations has become more pronounced. This is particularly noticeable during the orange shipping season, when the roads at the loading stations are subjected to continuous and concentrated wear, frequently in wet weather. Whenever possible, asphalted roads are provided in new road works, and asphalt is applied wherever old roads call for repair.

SIERRA LEONE

The report of the General Manager of the Sierra Leone Railway states the motorbus service after having been transferred from a Committee of Management to Railway Management was reorganised as from January 1, 1933. It has a route mileage of 12, and during last year 243,861 passengers were carried, the bus revenue mileage being 88,443. Two buses were added during the year to the fleet, which now consists of six buses and two covered lorries. The buses earned £2,356 11s. 8d. plus £312 13s. 1d. for services performed on behalf of the Government, while there was a further £62 9s. 11d. received from the hire of buses. £426 11s. 11d. was received for services performed by the lorries for the Government, and a further £55 10s. 10d. for lorry hire. With various incidentals the total revenue amounted to £3,706 12s. 11d., and there was a profit on the trading account of £455 12s. 3d., which was not quite sufficient to pay £403 3s. 2d. for depreciation and £69 3s. 7d. for interest charges.

SOUTH AFRICA

The figures just to hand for the month of August show an appreciable advance in the results obtained with the road motor services organised by the South African Railways and Harbours. The vehicle miles totalled to 444,783, more than 23,000 over the total for the corresponding month of 1933, and at £40,746 the revenue showed an increase of nearly £6,000, while the expenditure at £34,765 was only a little over £2,000 up. The revenue a vehicle mile worked out to 22·0d. as against 19·9d., while the expenditure a vehicle mile was 18·8d. as against 18·6d. The tonnage conveyed was 39,603, plus 48,443 gallons of cream, and the passengers numbered 171,976. Included in the commodities conveyed by the services in the Eastern Transvaal during September, 1934, were 110 tons of rails, 116 tons of tin ore, and 321 tons of construction material, mostly cement.

EAST INDIA

An interesting example of a co-ordinated bus service linking up two railway systems is seen working between Patna Junction station on the East Indian railway and Dighaghat on the B. & N.W. railway. It has recently been organised and enables inter and third class passengers from stations on one line to book through to stations on the other. The road service is maintained by the four buses seen in our illustration, which we reproduce by the courtesy of the *Indian State Railways Magazine*. Each of the four vehicles is capable of accommodating 24 passengers in comfort. They are well lighted, by electric light, after dark and are admirably adapted for a service of this sort. They are fitted with Ford V8 engines. The distance between the two points is three miles and the buses will run to connect with practically all the East Indian Railway trains arriving at Patna Junction and all the B. & N.W. railway steamers at Dighaghat. The Co-ordinated Transport Limited, a firm of Royal Mail contractors in Calcutta, will be responsible for the maintenance and running of the buses to be used on this important service.

The four buses to link up the East Indian and the B. & N.W. Railways

Buses for Egypt

Details of a small fleet of buses to accommodate two classes of passengers, in Egypt. Each unit is mounted on a Thornycroft chassis of the Charger type

IN a number of ways the five single deck buses supplied recently to the order of the Ramleh Electric Railways of Alexandria are of outstanding interest. One major point in the matter of coachwork to which attention may be directed is the way in which two classes of passengers are provided for. On this account the bodies are of somewhat novel design, and they have been built to the railway company's specification by the Brush Electrical Engineering Co. Ltd.

Accommodation has been provided for seven first class and nineteen second class passengers, the former being in the front compartment. Each class has separate entrances and is divided from the other by a frosted glass partition, with a sliding door. The entrances to the respective compartments are adjacent on the near side and each is provided with a hand-operated folding door. Particularly comfortable seating has been provided, with all first class seats facing forward in pairs, except for one single seat immediately to the right of the driver's compartment. The upholstery is in real antique red leather; the cushions are deeply sprung and the semi-bucket seat backs well stuffed and padded.

Special attention has been paid to ventilation and protection from the heat of the sun, and it is noticeable that all the main windows have been arranged to drop their full depth; five Flettner roof type air extractors assist to keep the interior cool in very hot weather. On one vehicle the Thurgood patent opening roof has been provided, but the other four bodies are of the fixed head saloon type. The driver, on the left-hand side of the vehicle, is accommodated in a cab formed by a framed partition and a full coach door on the near side for quick entry and exit. The equipment includes a safety glass windscreen with a blue-tinted glass sun vizor, 4-in. blue glass louvres over the side windows, spring loaded sun blinds, destination

A view looking into the first class compartment from the door in the partition

A side view of the buses for the Ramleh Electric Railways, showing the double entrance on the right-hand side

boards and built-in front indicator (lettered in English and Arabic), speedometer and distance recorder, windscreen wiper, fire extinguisher, and chromium-plated bumpers front and rear. The general colour scheme is blue and white, carried out in Belco cellulose finish, and the chassis and mudguards are painted black.

The chassis is the Thornycroft Charger type, specially designed for overseas conditions. This has a compact six cylinder engine of 112 b.h.p., with a bore of $4\frac{3}{8}$ in. and a stroke of $5\frac{1}{4}$ in. so that the capacity is 474 cubic inches, or 7,759 c.c. A three-point suspension with rubber-insulated brackets ensures that no stresses on account of frame distortion will reach the crankcase, and a cushioning effect is ensured in the transmission of the torque reaction from the engine to the frame. The cylinders are cast in one block, wet liners are fitted, and the head is easily detachable for decarbonising or grinding in the valves. On the removal of an aluminium cover, the overhead valve gear is readily accessible, while the camshaft and tappets are easily reached through the large doors on the side of the cylinder block.

There is a single plate dry clutch and a four speed gearbox, the drive thence being by a divided propeller shaft with enclosed metallic universal points and supported in the middle in a ball bearing flexibly attached to one of the frame cross-members. The rear is of the full-floating type, with off-set under type worm drive. The gearbox ratios are 1; 1·52; 2·40 and 4·50 to 1, while for the back axle the ratio may be either 5·75 or 6·25 to 1.

The springs ensure easy riding and they are, of course, secured to the axles by the Thornycroft patented form of relieving plates, enabling the holding-down bolts to be relieved of stresses due to the flexing of the springs. The brakes operate in 17-in. drums in all the wheels, foot operation being assisted by a triple vacuum servo, each brake on the front wheels having it own servo. The hand brake only operates the shoes in the drums on the rear wheels. As we have already mentioned, the steering is on the left-hand side, the steering gear is of the worm and wheel type, with taper roller bearings and a complete worm wheel so that a fresh sector can be brought into use should backlash develop through wear. For the rest, the chassis is characteristic of that sound design which has earned such a splendid name for Thornycroft vehicles at home and abroad.

It might be added in this connection that John I. Thornycroft & Co. Ltd. has recently completed another substantial order for the Egyptian State Railways, for twenty of the Lightning class six-cylinder petrol engined bus chassis. These, of course, will be fitted likewise with left-hand steering and they are to be equipped with coachwork to be built in Egypt. This chassis is lighter than the Charger, being designed for carrying 26 seated coaches of normal type. The engine is of 75 b.h.p. and has a capacity of 259·7 cubic in. or 4,254 c.c. In its main details the mechanism follows those lines which are familiar in Thornycroft vehicles. There is the scheme of divided propeller shaft with a support in the middle, although in this case it is a roller bearing and the universal joint at the front end is of the multi-fabric-disc type. The gear ratios are: 1; 1·58; 2·62; and 5·28 to 1, while the alternative ratios in the back axle are 5·4 or 6·25 to 1. It is interesting to note that when these vehicles go into service there will be well over 200 Thornycroft buses operating in the land of the Pharaohs.

A view in the second class compartment showing the arrangement of the sliding door in the partition

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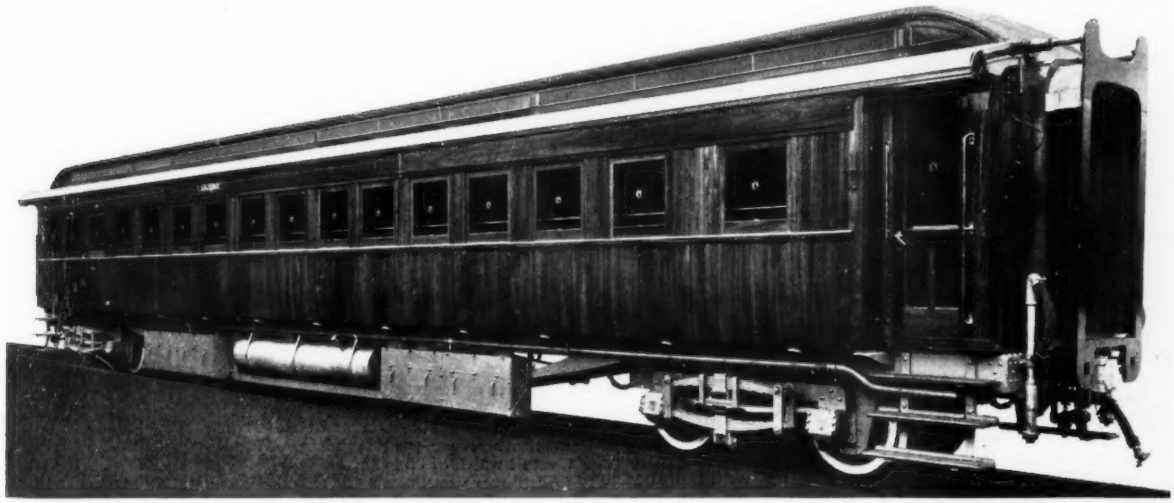
L.N.E.R. Country Services.—We have just received a copy of the booklet published by the L.N.E.R. giving particulars of the facilities available for the carriage of goods in the north-eastern area of that railway. There is a list of villages in which the service is available, and the fact that there are round about 2,500 entries in that list shows how comprehensive the service is—the name of the nearest station and the distance upon which cartage is charged where it is not included in the rail rate. The booklet also includes a table of charges for ordinary goods traffic, a map showing the stations from which the services radiate, and several illustrations of the service at work. Copies can be obtained from the L.N.E.R. offices at York.

Transport Efficiency. — This publication of Morris Commercial Cars Limited increases in its usefulness with each issue. In the December number there is an article describing in detail the new 3-tonner which can be used as a tractor unit for articulated six-wheelers or with a tipping body. Another article deals with the fact that "Overloading is Costly," while many operators will read with interest the comments by a barrister-at-law on the legal aspects of speed and his notes on lessons learned from the first appeals. Those who are more technically inclined will study the notes on carburetter settings and adjustments to suit different operating conditions and the running hints in pictures—this time dealing with the cleaning of the petrol filter.

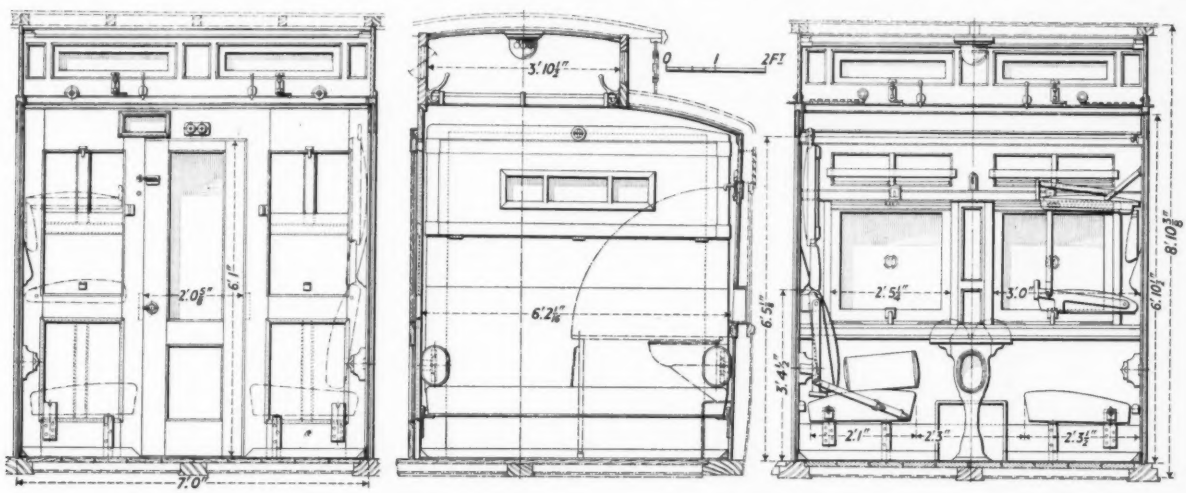
NEW ROLLING STOCK FOR SOUTH AFRICA

Thirty second class main line coaches have recently been completed by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. at their Saltley Works

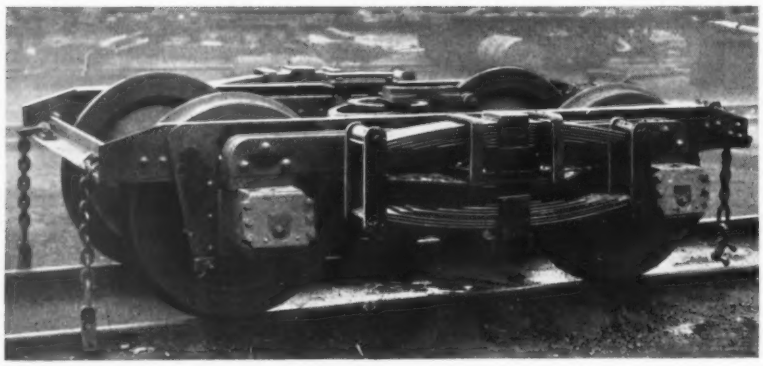


THE Metropolitan-Cammell Carriage & Wagon Co. Ltd. has recently built at its Saltley Works thirty second class coaches to the requirements of the South African Railways and under the supervision of the advisory engineer. The accompanying illustration shows one of these coaches, the design of which is in many respects an improvement on that adopted for the previous carriages of a similar type. A straight through corridor runs from end to end between the two entrance vestibules instead of crossing over near the centre as formerly. There are five full or six-berth compartments, each 6 ft. 11 in. wide, and three coupés or half (three-berth) compartments 4 ft. 7 in. in width, the doorways to which are provided with sliding doors.

The total accommodation is for 39 seated passengers, and the same number of sleeping berths is provided. The seat forms the lower berth, the seat back the middle berth when raised, and there is an upper berth which folds up against the partition during the daytime. Each compartment is fitted with a folding table, washbasin, parcel racks, mirrors, and other equipment to ensure the comfort and convenience of the passengers. The seats and berths are upholstered in brown buffalo hide and the interior finish is of teak. In the partition between the compart-



Sections through compartments: left, looking towards corridor; centre, longitudinally to the coach; and right, looking from corridor and showing the principal fittings and berths arranged, left-hand for day use and right-hand for night travel



Side view of new bogie

ments and the corridor a sliding shutter is placed opposite the end of each seat, covering when lowered a fixed window. The passengers can look out from each side of the coach.

Body Construction and Arrangement

The bodies are constructed of teak framing with teak matchboarding in the outside quarters and below the windows. The floors are double boarded with a space between the upper and lower layers. The roofs are of the Monitor type fitted with pivoted deck lights with gauze screens outside.

The entrance platforms instead of being open as formerly are now closed in vestibules fitted with collapsible gangways for passage through the train. At each end of the corridor there is a well equipped lavatory with bedding compartment adjacent. The lavatory walls have been kept clear of piping as the connections between the underframe and overhead tanks and also the other piping are carried through the bedding compartment instead of inside the lavatories. The lavatory floors are covered with rubber mats, the compartment floors with cork flooring and the corridors with linoleum.

Lighting and Water Services. Underframe and Bogie Design

The cars are fitted with electric lighting equipment, the accumulators being housed in steel containers slung from the corridor side of the underframe to improve the balance of the car. The underframe water tanks are also placed at the corridor side of the car as can be seen from the illustration. The underframes are constructed of rolled steel sections with fixed angle trussing to each solebar and each longitudinal. Steam heating pipes pass along one side of the underframe with connections to radiators in each compartment. The vehicles are equipped with vacuum brakes each having two 18-in. cylinders.

The bogies are of a new type evolved by the Chief Mechanical Engineer in South Africa.* The design is a departure from previous practice, one of its main features being the fitting of two long semi-elliptical bearing springs on each side the bogie, and outside the equalising bars which are straight. The distance apart of these two sets of springs—7 ft. 4 in.—is such as adequately to prevent body rolling. The bolster is suspended from a knife-edge on the bogie frame by an arrangement which includes these springs and, being equivalent to a 15-in. link hung vertically, allows plenty of side play. Another notable feature of this bogie is its deep oil bath, which holds four pints of oil and ensures easy running on curves. In short, very special measures have been taken in designing this bogie to ensure that it will carry the large body—measuring 63 ft. long × 9 ft. 3 in. wide × 8 ft. 10 in. high—satisfactorily on so narrow a gauge as 3 ft. 6 in.

* These bogies were illustrated and described on pages 459 and 460 of THE RAILWAY GAZETTE of September 21, 1934.

Rapid Construction and Delivery

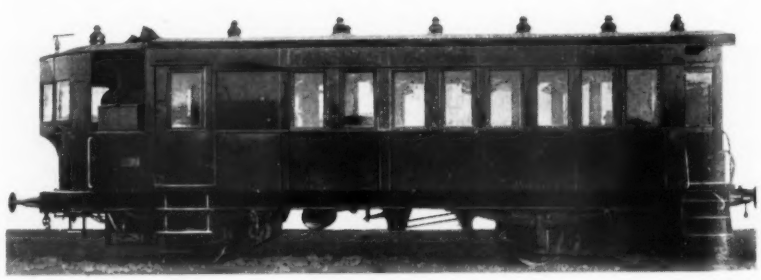
Owing to the urgent need for these coaches the time allowed in the contract for building them was unusually short. Notwithstanding this, the first delivery was made well in advance of the contract date, and the gain thus established maintained, with the result that the majority of the coaches will have arrived in South Africa in time for service during the Christmas season. The completion of an order for thirty coaches of this type within a period of a little over four months is a noteworthy achievement on the part of the builders.

The leading dimensions of these coaches are as follow:—

Length over headstocks	63 ft. 5 in.
,, ,, vestibules	63 ft. 0 in.
,, between bogie centres	47 ft. 6 in.
Bogie wheelbase	6 ft. 1 in.
Overall width of body	9 ft. 3 in.
Width over vestibules	7 ft. 4 in.
Overall height	12 ft. 5 in.

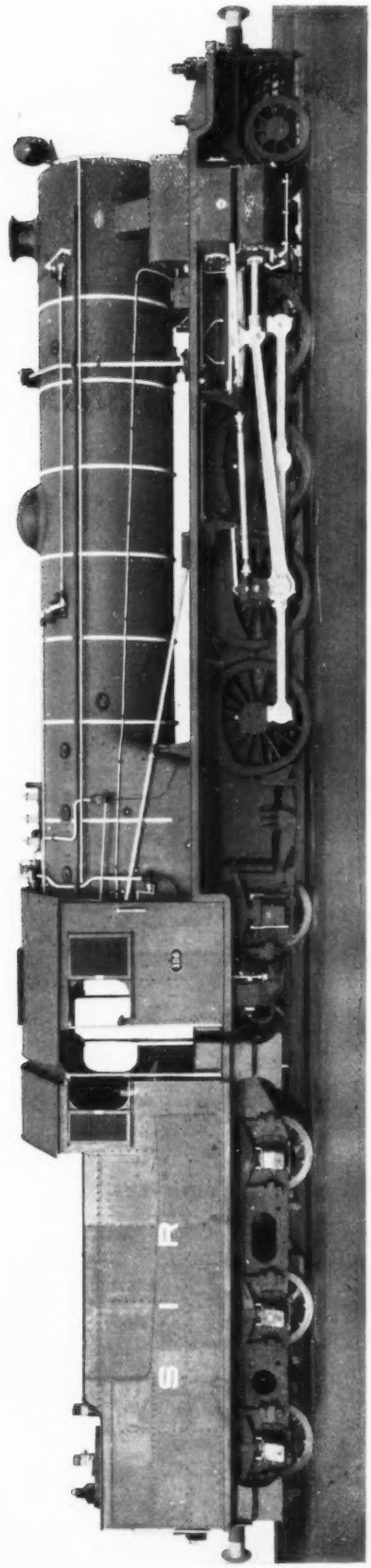
The principal sub-contractors were:—

Electric lighting equipment	J. Stone & Co. Ltd.
Metallic fittings and folding wash basins	James Beresford & Co. Ltd.
Vacuum brake equipment	The Westinghouse Brake & Saxby Signal Co. Ltd.
Buffing and drawgear springs	George Spencer Moulton & Co. Ltd.
India-rubber flooring	Ioco Rubber & Waterproofing Co. Ltd.
Steam heating apparatus, blinds and vestibule diaphragms	Laycock Engineering Co. Ltd.
Millboard panels	G. D. Peters & Co. Ltd.
Steel springs	English Steel Corporation Limited.
Automatic couplers	English Steel Corporation Limited.
Beclawat window channels and sliding door details	Beckett, Laycock & Watkinson Limited.
Galvanised tanks and other fittings	John Levick Limited.
Buffalo hides	J. & A. Hillman Limited.
Solid type wheels and axles	Taylor Brothers & Co. Ltd.
Steel sections	Patent Shaft & Axletree Co. Ltd.
Glass	Pilkington Brothers Limited.



An early railcar on the Continent. This steam vehicle was in use in 1907 on the system of the Royal Portuguese Railway Company

(*See letter to editor on page 1014*)



General view of new poppet valve "XD," 2-8-2 type goods locomotive, built for the South Indian Railway by the Vulcan Foundry Limited and embodying very modern equipment

NEW 2-8-2 TYPE FREIGHT LOCOMOTIVES FOR SOUTH INDIA

These engines, which have been built by the Vulcan Foundry Limited for the South Indian Railway, are fitted with poppet valves, thermic syphons and other modern features of equipment

THREE new "XD" class locomotives have recently been built for the South Indian Railway by the Vulcan Foundry Limited. These differ from the previous engines of the same class in that they are fitted with R.C. poppet valves and gearing in place of the piston valves and Walschaerts gearing formerly used. The engines, which are intended for heavy freight service, have the following leading particulars:—

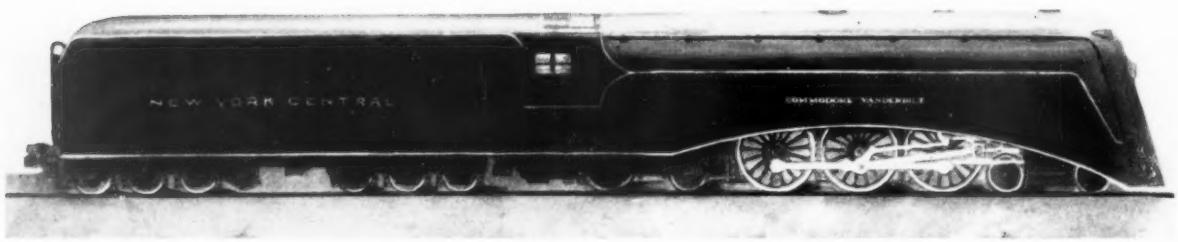
Cylinders, dia.	22½ in.
,, piston stroke	28 in.
Boiler, dia. (inside)	5 ft. 7⅞ in.
,, length between tube plates	18 ft. 6½ in.
,, working pressure	180 lb. per sq. in.
Firebox, length inside at top (steel)	8 ft. 11¾ in.
,, depth (front)	5 ft. 10 in.
,, ,, (back)	5 ft. 1 in.
Tubes (117), dia.	2¼ in.
Smoke tubes (26), dia.	5½ in.
Heating surface, firebox	179 sq. ft.
,, ,, tubes	1,965 sq. ft.
,, ,, thermic syphons (2)	50 sq. ft.
Total	2,194 sq. ft.
Superheater	540 sq. ft.
Combined total	2,734 sq. ft.
Grate area	45 sq. ft.
Coupled wheels, dia.	5 ft. 1½ in.
Front truck wheels, dia.	3 ft. 0 in.
Rear truck wheels, dia.	3 ft. 7 in.
Wheelbase, rigid	17 ft. 3 in.
,, total engine	35 ft. 0 in.
,, ,, ,, and tender	58 ft. 10⅜ in.

The six-wheeled tender has a tank capacity of 4,000 gallons and a coal capacity of 7½ tons. The engine in working order weighs 96 tons and the tender 49 tons, giving a total of engine and tender loaded of 145 tons. The tractive effort at 90 per cent. of the boiler pressure is 37,335 lb., and the ratio of adhesion at the same percentage is 4·08.

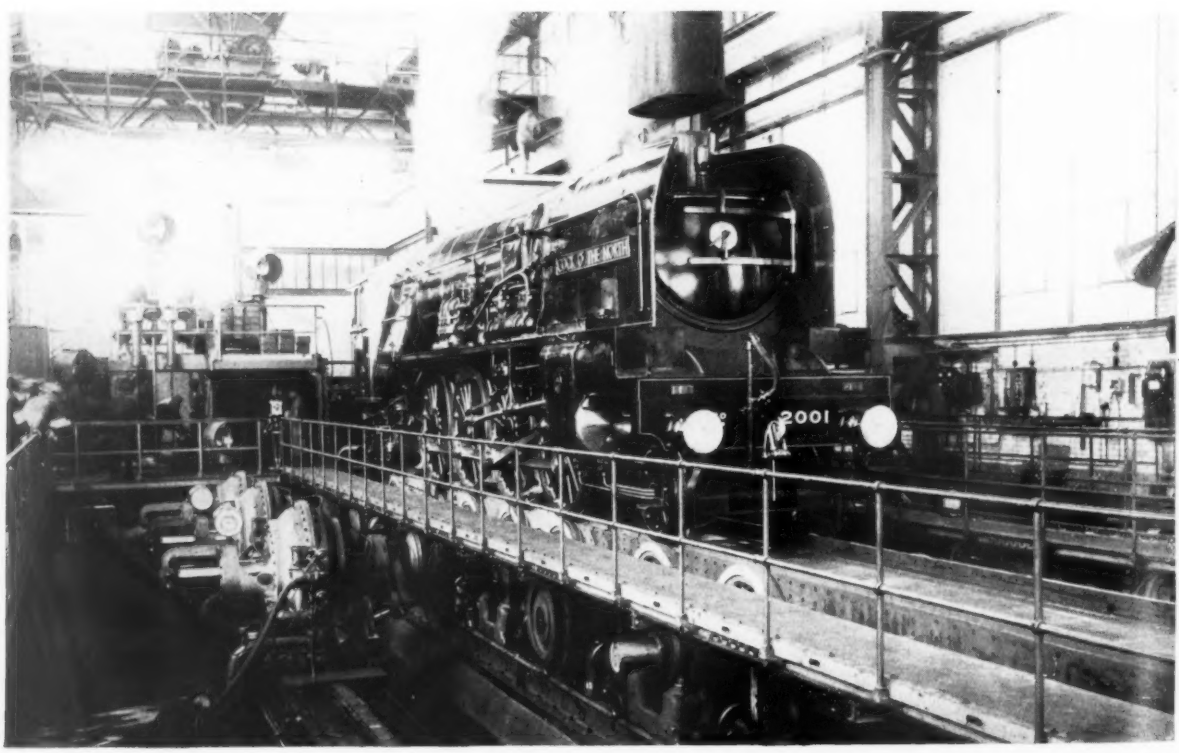
The equipment of the locomotives includes the following items: Colvilles Double Crown brand firebox steel plates (each firebox fitted with two Nicholson thermic syphons); Superheater Company's multiple valve regulator header; Associated Locomotive Equipment R.C. poppet valve mechanism; Tecalemit & Ajax system of grease lubrication for coupled axleboxes, coupling and connecting rods, valve gear, brake and spring rigging; Ajax pattern steam operated firedoors; Wakefield S.F. lubricator for cylinder lubrication; Lambert wet sanding gear; steam and vacuum brakes; Ross pop safety valves (three); Gresham & Craven non-lifting injectors (two) and Clyde soot blowers on sides of firebox.

These engines are therefore thoroughly up-to-date and in keeping with the enterprising policy now manifest upon Indian railways—as outlined in our editorial on page 1013—of using the latest equipment of all kinds in new locomotive design.

The latest of the bridges carrying the L.M.S.R. Derby-Manchester main line over the River Derwent to be reconstructed to carry heavier locomotives—Burleigh viaduct, 3¼ miles from Derby. The seven-span wrought-iron structure, 222 ft. long, erected in 1890, is about to be renewed in steel with six spans



Hudson type streamlined locomotive "Commodore Vanderbilt," New York Central Lines (see page 1037)



The L.N.E.R. 2-8-2 express locomotive "Cock o' the North" on the test bench at Vitry, near Paris

RAILWAY NEWS SECTION

PERSONAL

Mr. W. Y. Sandeman, B.Sc., who, as announced in THE RAILWAY GAZETTE of December 14, has been appointed District Engineer, Western District, Southern Scottish Area, L.N.E.R., served his apprenticeship with a firm of consulting engineers in Edinburgh, and joined the Engineering Staff of the North British Railway in 1913 as an Assistant in the Maintenance Department, which position he held until 1915. In that year he was appointed an Assistant Engineer to the Port of London Authority, and had charge of constructional work at Victoria Dock. A few months later he received a commission in the Royal Engineers, and served with a field company in France until the end of the war, being awarded the Military Cross in the New Year Honours of 1918. After demobilisation he returned to the service of the North British Railway as an Assistant in the Parliamentary and Constructional Department, and in the autumn of 1925 was appointed Assistant in charge of that department, by then under the L.N.E.R. In 1928, however, Mr. Sandeman was appointed District Engineer, Northern District, Southern Scottish Area, L.N.E.R., the post he now vacates to take charge of the Western District. Mr. Sandeman is a Bachelor of Science in engineering of Edinburgh University and an A.M.Inst.C.E.

Mr. W. Y. Sandeman, B.Sc.,
Appointed District Engineer, Western District, Southern Scottish Area, L.N.E.R.

Mr. W. Russell, B.Sc., A.R.T.C., who, as announced in THE RAILWAY GAZETTE of December 14, has been appointed—as from January 1, 1935—to be District Engineer, Northern District, Southern Scottish Area, L.N.E.R., was educated at Montrose Academy, being Science Medallist of the school in 1906. Thereafter he studied Civil Engineering at the Royal Technical College, Glasgow, gaining the Associateship of the College in 1909, and at Glasgow University where he graduated as a Bachelor of Science (Engineering) in 1911. He also had early practical experience with the Clyde Navigation Trust before joining the civil engineering department of Sir Wm. Arrol & Co. Ltd., Glasgow. With the latter firm he was employed for over eight years, first in the designing office and latterly on constructional works and contracts. In June, 1919, Mr. Russell entered the North British Railway service as a senior assistant in the New Works office of the Engineer, a position he retained under the Engineer, Scotland, L.N.E.R., after the amalgamation. In April, 1928, he was promoted to take charge of his department as Chief Assistant (Construction) under the Engineer (Scotland), the post he now vacates to become District Engineer, Northern District. Mr. Russell has, as Chief Assistant, been closely connected with many of the most important works carried out in recent years in the Scottish Area of the London & North Eastern Railway, including numerous bridge constructions. While studying civil engineering at Glasgow University, Mr. Russell was awarded his "Blue" for hockey.

Mr. W. Russell, B.Sc., A.R.T.C.,
Appointed District Engineer, Northern District, Southern Scottish Area, L.N.E.R.

We regret to have to record the recent death of Mr. A. H. Tatlow, for many years Publicity Manager, South African Railways and Harbours, from which position he retired in 1930. Mr. Tatlow was born in 1870 and was the son of the late Mr. J. T. Tatlow, sometime Chief Accountant, Lancashire & Yorkshire Railway. After some years' experience of British railway work, he joined the Natal Government Railways in 1903. Two years later he inaugurated what is now the *South African Railways and Harbours Magazine*, and was also responsible for many travel publications dealing mainly with South Africa, but also with other countries. *A History of the Glasgow & South Western Railway*, *Brief Essays on Bright Subjects*, and the *Official Handbook of Natal* are among these. For the last 20 years of his service he was Publicity Manager of the whole S.A.R. & H. system. He was a leading light in his profession in the Union, and was elected a life-member of the South African Publicity Advisory Committee at the Cape Town Publicity Conference in 1930. In an editorial note on page 1009 we refer to the loss of this leader of Empire publicity.

The late Mr. A. H. Tatlow, F.R.G.S.,
Publicity Manager, South African Railways and Harbours, 1910-30

Mr. C. C. Verrinder, who, as announced in THE RAILWAY GAZETTE of November 30, is retiring from the position of Agent General in France for the British Railways (Agence Officielle des Chemins de fer Britanniques) at the end of this month, began his railway career on the old London & South Western Railway and was transferred from the Superintendent of the Line's

Office to the Paris Office of the L. & S.W. in 1914, as Assistant to the Agent. In 1916 he was appointed Acting Agent and remained in charge of the office during the whole time that the Havre-Southampton route was the only one open to civilian passengers. In 1921 he was appointed Paris Agent and soon after the creation of the Southern Railway became its General Agent for France in July, 1924. In June, 1932, he was created a Chevalier of the Legion of Honour. It was in January last that he was appointed Agent General in France for the British Railways. Mr. Verrinder has acted as liaison officer with the French Railway Administrations in arranging the journeys of many notable personages, including His Majesty the King on the occasion of his returning from a cruise when he landed at Genoa, and His Royal Highness the Duke of Connaught on his annual visits to the South of France.

Mr. C. C. Verrinder,

Agent General in France for the British Railways, January–December, 1934

In connection with the retirement of Mr. John C. Mitchell, announced in THE RAILWAY GAZETTE of December 14, Lord Ashfield presided at a large gathering on that date in the board room at 55, Broadway, to present Mr. Mitchell with a chiming grandfather clock and silver tray, suitably inscribed, on behalf of himself, the Vice-Chairman and officers, and a silver inkstand from the council and members of the local committees of the T.O.T. Benevolent Fund.

Mr. John Wardle, who, as announced in THE RAILWAY GAZETTE of December 7, is retiring from his association with the London Passenger Transport Board at the end of this month, was born in 1874 and had 11 years' early experience on the old Lancashire & Yorkshire Railway in the Goods Manager's Department. For the last four years he was Secretary to the Goods Manager, but in 1900 he was appointed an assistant to the Secretary of the Grand Trunk Railway of Canada. In 1904, Mr. Wardle returned to England as London Manager of the Grand Trunk Traffic Department. A year later, however, he became a partner in a railway and steamship business. It was in 1908 that he joined the Metropolitan Railway to take charge of the Parcels and Goods Department and he was subsequently appointed Commercial Manager, the post he held for 20 years until the recent inclusion of the Metropolitan in the London Transport amalgamation. During the war Mr. Wardle's services were loaned to the Ministry of Food where he became first Director of Cold Storage and Inland Transport of Food. Since the amalgamation Mr. Wardle has been engaged principally as chairman of a committee to enquire into and report upon the ticket problems connected with the various forms of transport of the London Passenger Transport Board, and he voluntarily tendered his resignation under the age limit, on the conclusion of that work.

Elliott] [*Fry*

Mr. John Wardle,

Sometime Commercial Manager, Metropolitan Railway, and on Special Duty with L.P.T.B., 1933–34

We regret to note the death, on December 15, of T. C. R. Orme, O.B.E., who from 1924-27 was Assistant Marine Manager, Southampton, Southern Railway. Mr. Orme joined the Marine Department of the late L.S.W.R. as long ago as 1875, and, after varied experience, rose to be Chief Passenger Clerk in 1899. From January, 1910, he was Assistant Marine Manager, L.S.W.R., and subsequently held the corresponding post under the Southern Railway until his retirement in 1927, with 52 years' service to his credit. He was awarded the O.B.E. for administrative services rendered during the war, and subsequent to his retirement was Chairman of the Board of Management, Southern Railway Servants' Orphanage.

Major E. W. Slaughter, M.B.E., M.I.Mech.E., Deputy Chief Mechanical Engineer, Egyptian State Railways, has been appointed Deputy Locomotive and Carriage Superintendent, H.E.H. the Nizam's State Railway, India, and takes up his duties at Hyderabad in January. Two outstanding results of his work in Egypt are the new locomotive shops at Abu-Zaabal, for the development of which he was responsible, and the Cairo Railway Museum, which he organised, as described in THE RAILWAY GAZETTE of January 27, 1933. Prior to joining the Egyptian State Railways in 1929, Major Slaughter was in the Egyptian Public Works Department. He is also in the Army Reserve as an Ordnance Officer.

Major E. W. Slaughter, M.B.E.,

Appointed Deputy Locomotive and Carriage Superintendent H.E.H. the Nizam's State Railway

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Col. William McLellan, whose death we announced last week, was born in 1874 and educated at Birkenhead and Liverpool University, subsequently serving his apprenticeship with Cochran & Company, Birkenhead. After further experience with Siemens Bros. at Woolwich, he became a Resident Engineer of the Cork Tramways and Lighting Company. It was in 1899 that he joined Mr. Charles H. Merz as Consulting Engineers, Newcastle-upon-Tyne, though the firm of Merz & McLellan was not formed until 1901. Since then Col. McLellan has been connected with all kinds of electricity schemes throughout the world—including many important railway electrifications—especially those on a large scale, and has recently been concerned intimately with the National grid in this

country. During the war he was a Lieutenant in the Northumberland Fusiliers before being appointed Controller of Electric Power Supply, and as Deputy Director of Experiments and Research, was also associated with the First Sea Lord of the Admiralty, in the preparation of the then new organisation for dealing with the submarine menace. Moreover he was deputed as a member of several special Naval Missions. Col. McLellan was a Member of the Institution of Electrical Engineers and a C.B.E. His decision to retire from the firm which bore his name had only just been announced before his sudden death which came as a shock to the industry in which he was so outstanding a personality.

G.W.R. Appointments

The following appointments are announced by the Great Western Railway:—

Mr. J. E. Potter, Assistant to District Traffic Manager, Plymouth, to be Assistant Divisional Superintendent, Paddington, as from January 5.

Mr. J. S. P Pearson, Chief Clerk, District Traffic Manager's Office, Plymouth, to be Assistant to District Traffic Manager, Plymouth, as from January 5.

Mr. C. F. E. Harvey, Junior Assistant, Divisional Superintendent's Office, Birmingham, to be Chief Clerk, District Traffic Manager's Office, Plymouth, as from January 5.

Mr. R. H. B. Nicholls, Chief Clerk, Divisional Superintendent's Office, Gloucester, to be Assistant Divisional Superintendent, Cardiff, as from January 1.

Mr. W. R. Stevens, Junior Assistant, Divisional Superintendent's Office, Paddington, to be Chief Clerk, Divisional Superintendent's Office, Gloucester, as from January 1.

Mr. W. Powell, Assistant District Goods Manager, Cardiff, to be District Goods Manager, Newport, as from December 17.

Mr. C. E. Boxall, Goods Agent, Paddington, to be Assistant District Goods Manager, Cardiff, as from December 17.

Mr. H. J. Hoskins, Assistant District Goods Manager, London, to be Goods Agent, Paddington, as from December 17.

Mr. D. Blee, Goods Agent, Slough, to be Assistant District Goods Manager, London, as from December 17.

To succeed Mr. C. H. Bressey, C.B., C.B.E., F.S.I., who has been appointed Engineer for the Survey of Highway Development in Greater London, the Minister of Transport has appointed Mr. F. C. Cook, D.S.O., M.C., M.Inst.C.E., F.S.I., at present Deputy Chief Engineer, to be Chief Engineer of the Roads Department of the Ministry, and has further appointed Mr. A. J. Lyddon, O.B.E., M.Inst.C.E., at present Divisional Road Engineer for the Northern Division, to succeed Mr. Cook as Deputy Chief Engineer.

His Majesty the King of Denmark has conferred upon Mr. H. H. Mauldin, Superintendent, Southern Area (Eastern Section) L.N.E.R., the honour of a Knighthood of the Order of Dannebrog.

Indian Railway Staff Changes

Mr. C. A. K. Bradley has been appointed to officiate as Chief Mechanical Engineer, E.B.R., as from October 25. Mr. H. G. Scotter, has been appointed to officiate as Deputy Chief Mechanical Engineer as from the same date.

Mr. R. De Vere-Irwin, has been appointed to officiate as Deputy Chief Mechanical Engineer, Shops, E.B.R., as from October 11.

Mr. W. C. Cartland, Deputy Chief Engineer (Signals), E.I.R., has been granted 18¾ months' leave preparatory to retirement, as from November 15.

Mr. J. T. Day, Deputy Traffic Manager, G.I.P.R., has been granted 12 months' leave from October 15.

Mr. A. S. Alcock, Secretary to the Agent, G.I.P.R., returned to duty on October 15.

Is Efficiency a Cult?

Under the chairmanship of Mr. Charles J. Hambro, Deputy Chairman of the Great Western Railway Company and also a Director of the Bank of England, members of the G.W.R. and Bank of England Debating Societies discussed at Paddington Station, on December 13, the motion "That the cult of efficiency is a menace to the best traditions of our civilisation." The Bank of England Society, which took the affirmative, was represented by Messrs. O. H. Downing and L. P. Bonnet, while Messrs. R. F. Thurtle and F. M. Jacques spoke for the G.W.R. Society on the negative side. There resulted one of the best and most spirited debates ever staged at Paddington, a keen discussion being maintained for more than two and a half hours.

The view of the proposers was that modern insistence on efficiency, with its accompaniments of mechanisation, division of labour, and all-powerful experts, was undermining much that is best in our civilisation. The world was being flooded with mass-produced and characterless products of all kinds which could not be absorbed by the population. Workmen were now slaves of the belt, their operations checked by stop-watch, and they had no real interest in their work. The many-sided skill in craftsmanship which was a feature of earlier generations was rapidly passing away and being replaced by nothing that was equally valuable. The liberty of the individual was another fine tradition that was being increasingly undermined by modern efficiency methods.

On the negative side of the motion, it was argued that real efficiency merely meant doing things in the best possible way, and that for this reason too much emphasis could not be placed upon its importance. Mechanisation on an increasing scale was inevitable. The greater power of production it provided, with lessened human labour and drudgery, was a beneficent thing for mankind. Food, clothes and amenities of life were more plentiful because of modern efficiency; disease was less prevalent, and the oppressive load of human labour was lightened. The displacement of labour by machines was not a condemnation of efficiency, but rather an indication of the need for efficiency over a wider field—in the spheres of government and economics. Modern efficiency had given mankind the great boon of leisure, and this in its turn gave ample opportunity for indulging the taste for craftsmanship and the arts. A cult of efficiency was needed in respect of the use of leisure hours. Apart from sentimental affection for old times and old ways, there was no case against the modern insistence on efficiency—more rather than less of which was the world's present need. It was quite wrong to suggest that efficiency was inhuman in its application. On practical grounds alone, true efficiency called for every consideration being given to the welfare of employees.

Mr. Hambro brought the debate to a close with some helpful comments on both sides of the issue, and stressed the need for solving the paradox of poverty amidst plenty. He expressed his very great pleasure in being present.

L.M.S.R. Office Dinner at Crewe—The eleventh annual dinner of the office of the Divisional Superintendent of Operation, Western Division, was held in the Crewe Arms Hotel, Crewe, on December 6. After the loyal toast a silent tribute was paid to the memory of the late Divisional Superintendent of Operation, Mr. L. D. Ford. Mr. F. H. Fisher, Divisional Controller, Passenger Service, in proposing the toast of "The L.M.S.R.," referred with pleasure to the definite signs of railway trade being on the up-grade in so far as had been acknowledged by the management in a tangible form to both railway shareholders and company's employees. The toast of "The Chairman" was given by Mr. P. Cawthorne, who referred to the wide and varied experience of Mr. F. A. Pope, and the manner in which he had applied it to the betterment of the Western Division. Mr. Pope, in responding, said that whilst he was comparatively new to Crewe, he was keenly appreciative of the help he was receiving from all.

The Development of European Express Passenger Train Services, 1914-1934

(*From a correspondent*)

An analysis of the increase which has taken place in the speed and frequency of main line passenger train services in Great Britain, France, Germany, and Italy, and also of high-speed scheduled mileage in relation to total track mileage and total passenger train mileage, which shows that France now holds the premier position in European railway speed

In the September issue of *Die Reichsbahn*, the official organ of the German State Railway, there appeared an article of considerable interest summarising the developments that have taken place in the speed and frequency of European fast train services during the past few years. Acknowledgment was made to *The Railway Magazine* for certain of the data which furnished the basis for the tables contained in the article, including lists of the fastest runs made in each country, and of the aggregate mileage booked in each country to be covered at a speed of 90 km.p.h. and over from start-to-stop. In order to afford a more detailed comparison of the relative merit of each railway's high speed achievements, some additional bases of comparison were sought; these high speed mileages were therefore tabulated in their relation to the total route mileage and passenger train mileage of each system concerned. The latter comparisons show British achievements in speed in a somewhat better light than is obtained by a mere comparison of the mileages, but a brief article in *The Times* of September 28 last completely misconstrued these figures, claiming that 85 per cent. of British expresses average 55·9 m.p.h. and more on their journeys, as compared with only 32·5 per cent. in Germany; and that 20·4 per cent. of British expresses average about 59 m.p.h. or more, against 13 per cent. in Germany. Actually the interpretation of the German figures was that the British express train mileage booked at 55·9 m.p.h. was equal to 85 per cent. of the route mileage of the railways in Britain, as compared with the corresponding German figure, which was only 32·5 per cent. of the total route mileage of German railways, and similarly at the higher speeds.

For information, the main features of the German analysis, combined in one table, appear in Table A herewith. As proportions only are concerned, conversion from kilometres to miles has not been attempted. Speed is divided into three grades—90 km. (55·9 m.) p.h. and over, 95 km. (59·0 m.) p.h. and over, and 100 km. (62·1 m.) p.h. and over, and the aggregate distances booked at these speeds are shown for the principal railways of Britain and France, in comparison with those of Germany, France, and Belgium. These figures are then expressed as percentages, first of the total route kilometrage of each railway system, and then of the daily aggregate passenger train kilometrage over each line. The former percentage relates the high speed kilometrage to the size of the system concerned, but makes no allowance for the proportion of main line to branch line, which will largely determine the proportionate traffic demand for high speed service. In the final column of the table, aggregate high speed kilometrage is related to total passenger train kilometrage, and this is probably a fairer basis of comparison.

Whatever be the basis, one fact that emerges clearly is the pre-eminence in speed of the Northern Railway of France, in every range of speed but the highest, over all other railways in Europe. Proportioned to route kilometrage, our Great Western Railway takes second place, and after that come the Alsace-Lorraine Railways of France, with the L.M.S.R. fourth, again excepting the highest range of speed, which shows different groupings altogether, in part due to the limited use of high speed railcars by certain railways. Proportioning high speed mileage to route mileage, Great Britain takes the lead, as already mentioned. In proportion to total passenger train kilometrage, after the Nord the Est of France and the English Great Western tie closely in their figures, with the Alsace-Lorraine and Paris-Orleans Railways then taking precedence over the London Midland & Scottish. Nationally, on the latter average basis, France easily takes the highest place, followed by Great Britain, Germany, Belgium, and Italy in the order named. As regards the actual runs in each European country timed at 58 m.p.h. and over, which go to make up the aggregate mileage of runs so timed, a complete list, based on the summer time-tables, was given in the August 31 issue of THE RAILWAY GAZETTE.

Table B shows the meteoric rise in railway speed which has taken place in Germany during the last four years. In 1930 there were only two runs, with a total mileage of 60, booked to be completed at or over 55·9 m.p.h. from start-to-stop; in 1934 there are 167 such runs, with a total mileage of 10,280, out of which 50, totalling 4,169 miles, are made at 59·0 m.p.h. and over, and 15, of 1,900 miles, at 62·1 m.p.h. and over. Although, as mentioned in the last paragraph, Germany has not yet attained to the French and British position in railway

TABLE A—EUROPEAN RAILWAY TRAIN KILOMETRAGE AT 90 K.P.H. AND OVER PROPORTIONED TO TRACK KILOMETRAGE AND TOTAL PASSENGER TRAIN KILOMETRAGE

Country	Railway	Total Route Mileage	Daily Passenger Train Mileage	Start-to-Stop Train Schedules at			Percentage of Route Kilometrage covered at			Percentage of Train Kilometrage covered at		
				100 k.p.h. & over	95 k.p.h. & over	90 k.p.h. & over	100 k.p.h. & over	95 k.p.h. & over	90 k.p.h. & over	100 k.p.h. & over	95 k.p.h. & over	90 k.p.h. & over
		Km.	Km.	Km.	Km.	Km.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Great Britain	G.W.R.	6,041	174,225	570	3,417	9,424	9·4	56·5	156·0	0·3	2·0	5·4
	L.M.S.R.	11,110	400,079	460	2,176	10,919	4·1	19·7	98·3	0·1	0·5	2·7
	L.N.E.R.	10,222	276,630	170	710	5,626	1·7	6·9	55·0	0·1	0·3	2·0
	S.R. ..	3,479	240,351	—	—	276	—	—	7·5	—	—	0·1
France	Nord. ..	3,830	87,017	535	7,633	12,123	13·9	109·3	316·5	0·6	8·9	13·9
	A.L. ..	2,265	49,127	526	712	2,330	23·2	31·4	102·9	1·1	1·5	4·7
	Est. ..	5,017	92,863	—	858	4,489	—	17·1	89·5	—	0·9	5·6
	P.O. ..	7,534	114,013	503	2,146	4,418	6·7	28·5	58·6	0·4	1·9	3·9
	Etat ..	8,750	126,407	1,829	1,848	3,358	20·8	21·0	38·4	1·5	1·5	2·7
	Midi ..	4,227	58,689	—	108	864	—	2·6	20·4	—	0·2	1·5
	P.L.M. ..	9,806	211,597	1,479	1,713	2,891	15·0	17·5	29·5	0·7	0·8	1·4
France (total) ..		41,426	739,713	4,872	15,018	30,473	11·9	36·2	73·6	0·7	2·0	4·1
Gt. Britain (total)		30,852	1,091,285	1,200	6,303	26,245	3·9	20·4	85·0	0·1	0·6	2·4
German State Rly.		50,962	1,134,399	3,058	6,714	16,555	6·0	13·0	32·5	0·3	0·6	1·5
Belgian Nat. Rlys.		5,001	128,370	—	172	1,590	—	3·4	31·8	—	0·1	1·2
Italian State Rlys.		16,122	247,594	—	164	971	—	1·0	6·0	—	0·1	0·4

TABLE B—TOTAL HIGH-SPEED MILEAGE IN GERMANY, 1931-34 (Number and aggregate mileage of runs from start-to-stop)

Year	100 km.p.h. (62·1 m.p.h.) and Over		95 km.p.h. (59·0 m.p.h.) and Over		90 km.p.h. (55·9 m.p.h.) and Over	
	No. of Runs	Miles	No. of Runs	Miles	No. of Runs	Miles
1931 ..	—	—	—	—	2	60
1932 ..	—	—	2	356	5	428
1933 ..	4	712	4	712	30	2,797
1934 ..	15	1,900	50	4,169	167	10,280

speed, relatively to her route and passenger train mileage, the preparations now being made appear to indicate that there will be no such inferiority when the 1935 time-tables come into force in May next.

Two complete decades now having passed since the last pre-war train services were in force, it is also of interest to examine the advance that has been made in main line speeds from 1914 to 1934. The period from 1914 to the beginning of 1919 was, as is well known, one of uninterrupted deceleration, owing to national exigencies, and left railway speeds generally in a worse position than they had been in for thirty years or more. By 1924, however, a rapid recovery had restored main line facilities on many railways roughly to their pre-war position. Chief interest, however, centres in what has happened since then. The second half of the period under review has witnessed a steady, though perhaps not spectacular, advance in French speeds; in Germany railway speed was more or less stagnant until the year 1932, when the astonishing advance already mentioned first began; in Great Britain the changes since 1924 have been comparatively slight, except for the general acceleration brought about by the L.M.S. and L.N.E. Railways in 1932; while in Italy the development has, perhaps, been the most revolutionary of any. On long distance journeys it has been largely assisted by the construction of the new *direttissima* lines from Rome to Naples and Bologna to Florence; but apart from that the great expansion of Italian express train services, with long non-stop journeys of a kind never previously attempted and a substantial increase of running speeds, have made the Italian speed position in 1934 totally different from what it was in 1914. Italy has still, of course, a long way to advance before her general speed of railway travel can challenge comparison with those of France, Britain, or Germany, but what has been done by way of improvement in the last five years or so has been very creditable, and, indeed, notable.

Table C, therefore, presents an analysis of the development of certain of the principal express train services in Great Britain, France, Germany, and Italy from 1914 to 1934. Except in Italy, the services selected are exclusively those between the capitals of each country and the chief provincial cities, arranged in consecutive order from journeys of 100 miles or slightly less to journeys of over 500 miles. The fastest time on each service is first shown, with the percentage advance in speed from 1914 to 1934, and then the total number of daily express trains on each service, with the average of their overall times and speeds, stops included; this combination of number of trains and average journey time gives, of course, a far better estimate of the facilities offered than the fastest time alone. The percentage increase in average service speed is then shown, and also the percentage increase in the number of trains on the service; the final column is simply an average of the increased speed and increased service figures, showing an approximate mean figure for the general improvement of service during the twenty years.

Owing to the varied practice of different railways and different countries, the selection of the trains which can be regarded as "express," and therefore qualifying for inclusion in these averages, has not been easy. On the British London, Midland & Scottish and London & North Eastern Railways, and on the Northern Railway of France, the best standards of speed are more or less generally applied to all the principal services, and the "levelling up" ideal so often advocated in the columns of THE RAILWAY GAZETTE, and referred to in the discussion following the recent paper on the speeds of the future, read by Mr. Raymond Carpmael to the Institute of Transport, is seen in practical operation. This desirable train service characteristic is clearly apparent in Table C when the average service speeds most nearly approach the speed of the fastest service, as in the case of London-Birmingham, L.M.S.R., London-Newcastle and London-Edinburgh, L.N.E.R., and Paris-Lille, Northern Railway of France.

The more general practice, however, is to schedule one or two high speed trains daily in each direction over each main route, making few stops and booked at journey speeds considerably in excess of those of the remaining trains on the same service. This is particularly the case in Germany, where the specially fast trains are in the "FD" class, and are subject to a supplementary fare in excess of the seat charge for the use of "D" class express trains. Similarly, on the French Paris-Orleans, Etat, and P.L.M. lines, and on certain services of the English Great Western Railway, there are wide differences in speed between the high speed trains and the ordinary express trains, which together make up the express service over the route concerned, with the result that between average service speed and the speed of the best train there may be a gap of 7 to 12 m.p.h. or even more. An extreme case is Berlin-Hamburg, where the high average of the fourteen trains making up the service—57·3 m.p.h.—is overtopped by more than 20 m.p.h. in the case of the fastest train, the Flying Hamburger, booked at 77·4 m.p.h. start-to-stop. Between the mean speed of all the fastest British services tabulated and of all the average British service speeds, there is a gap of only 5·4 m.p.h.; the corresponding figures are 7·2 m.p.h. for France, 8·1 m.p.h. for Italy, and no less than 10·0 m.p.h. for Germany. That is to say, Great Britain maintains the most uniform speed of service, though not boasting the highest averages.

As regards individual British services, the biggest advance among those tabulated has been in the case of London-Leeds, L.N.E.R., and London-Liverpool, L.M.S.R. In the former case, though average journey speed has been increased by only 3·7 per cent., the service has gained one-third in its frequency by the addition of the fast Queen of Scots and West Riding Pullman journeys in both directions. The Euston-Liverpool service of the L.M.S.R., however, has been speeded up by an average of 16 min. per train, which gives an average increase of 7·2 per cent. in service speed, together with 14·3 per cent. in frequency, as compared with 1914.

At the other end of the scale is the London-Birmingham service of the Great Western Railway, which has lost 5·6 per cent. in average speed and 5·9 per cent. in frequency as compared with the pre-war figures. The recent deceleration of a number of the Birmingham two-hour trains is still fresh in mind; before the war there were fourteen daily two-hour trains by the G.W.R. route between Paddington and Birmingham, whereas now there are but five. Of all the services tabulated, only three show lower average service speeds in 1934 than in 1914, and of them this is the most substantial worsening in the table. A regrettable feature of this particular comparison between 1934 and 1914, also, is that useful pre-war G.W.R. two-hour trains, such as the 1 p.m. down (bridging the lengthy gap between 11.5 a.m. and 2.10 p.m.), and the late evening two-hour service at 8 p.m. down, have never reappeared since the war, and although interchangeability of tickets now operates with the pooling of the traffic, the traveller is worse off rather than better, as the remaining G.W.R. trains run in both directions at times very similar to those of the L.M.S.R. route. The L.M.S. service, conversely, has increased by 2·7 per cent. in average speed, notwithstanding the fact that eight of the non-stop trains of 1914 have all since had intermediate stops inserted in their schedules—two stops in one case—without increase of overall journey time.

Elsewhere the British changes in twenty years have been very slight; for all the services tabulated the average increase in the speed of the fastest trains has been 3·2 per cent., and of service speeds it has been only 2·3 per cent. These figures tally fairly closely with those given in the November issue of *The Railway Magazine*, in the customary review of the 1934 summer train services, where the speed of the quickest trains on seventy different services was shown to have risen by an average of 2·84 per cent. from 1914 to 1934, 42 showing some improvement, 8 having undergone no change, and 20 being slower in 1934 than in 1914.

The French portion of Table C shows an entirely different state of affairs. There are special reasons which help

to explain the radical improvement in certain services; for example, the transfer to France after the war of Alsace and Lorraine has abolished the frontier formalities which previously delayed the Paris-Basle and Paris-Strasbourg trains; and the amicable Franco-Belgian arrangements which now permit the non-stop working of Nord locomotives between Paris and Brussels and Paris and Liége, together with the great improvement effected in the Belgian main line tracks, have handsomely benefited these two services also. Indeed, the Paris-Brussels service is now not only the fastest inter-capital railway service in the world, but is also the fastest passenger train service of its length and frequency in any part of the world, as its ten trains average 58·4 m.p.h. between

TABLE C—IMPROVEMENT OF PRINCIPAL EUROPEAN EXPRESS TRAIN SERVICES, 1914–34 (WINTER TIMETABLES)

Country	Railway	Service	Distance	Year	Fastest Train			Average of Express Services					
					Journey Time	Inclusive Speed	Acceleration 1914–1934	No. of Trains Daily	Inclusive Average Time	Inclusive Average Speed	1914–34 Increased Speed	1914–34 Increased Service	1914–34 Mean Improvement
			Miles		hr. min.	m.p.h.	Per cent.		hr. min.	m.p.h.	Per cent.	Per cent.	Per cent.
Great Britain	S.R.	London-Southampton	79·2	1914	1 38	48·5		14	1 50	43·2			
				1934	1 28	54·0	10·9	20	1 42½	46·4	7·4	42·9	25·2
	G.W.R	London-Birmingham	110·6	1914	2 00	55·3		17	2 03	53·9			
				1934	2 00	55·3	*Nil*	16	2 10½	50·9	—5·6	—5·9	—5·8
	L.M.S.R.	London-Birmingham	112·9	1914	2 00	56·5		20	2 11	51·7			
				1934	2 00	56·5	*Nil*	18	2 07½	53·1	2·7	—10·0	—3·8
	G.W.R.	London-Bristol	118·3	1914	2 00	59·2		13	2 21½	50·2			
				1934	2 00	59·2	*Nil*	13	2 13½	52·8	5·2	*Nil*	2·6
	G.W.R.	London-Cardiff	145·1	1914	2 49	51·5		14	3 08½	46·2			
				1934	2 41	54·1	5·0	14	2 56	49·5	7·1	*Nil*	3·6
	L.N.E.R.	London-Leeds	185·8	1914	3 25	54·4		12	3 51	48·2			
				1934	†3 13	57·7	6·1	16	3 43	50·0	3·7	33·3	18·5
	L.M.S.R.	London-Manchester	188·5	1914	3 30	53·9		14	3 51	49·0			
				1934	3 15	58·0	7·6	15	3 44	50·5	3·0	7·2	5·1
	L.M.S.R.	London-Liverpool	193·7	1914	3 35	54·1		14	4 05	47·4			
				1934	3 20	58·1	7·4	16	3 49	50·8	7·2	14·3	10·7
	L.M.S.R.	London-Leeds	196·0	1914	3 45	52·3		18	4 09	47·2			
				1934	3 46	52·1	—0·4	18	4 14½	46·2	—2·1	*Nil*	—1·1
	G.W.R.	London-Plymouth	225·7	1914	4 07	54·7		11	4 47½	47·1			
				1934	4 04	55·5	1·1	11	4 43	47·8	1·5	*Nil*	0·8
	L.N.E.R.	London-Newcastle	268·3	1914	5 16	50·9		10	5 40½	47·3			
				1934	5 06	52·6	3·5	14	5 29	49·0	3·6	40·0	21·8
	L.N.E.R.	London-Edinburgh	392·7	1914	7 50	50·1		8	8 18	47·3			
				1934	7 40	51·2	2·2	10	8 03	48·8	3·3	25·0	14·2
	L.M.S.R.	London-Glasgow	401·4	1914	8 15	48·7		8	8 43	46·0			
				1934	7 40	52·4	7·6	8	8 37½	46·5	1·1	*Nil*	0·6
	L.M.S.R.	London-Perth	449·9	1914	9 30	47·4		8	10 09	44·3			
				1934	9 43	46·3	—2·3	8	10 11	44·2	—0·2	*Nil*	—0·1
	L.N.E.R.	London-Aberdeen	523·2	1914	11 20	46·2		7	12 12½	42·9			
				1934	11 30	45·5	—1·5	8	12 02	43·5	1·4	14·3	7·9
France	Nord	Paris-St. Quentin	95·1	1914	1 33	61·3		10	1 41½	56·2			
				1934	1 28	64·8	5·7	11	1 35½	59·6	6·1	10·0	8·1
	Etat	Paris-Havre	141·5	1914	2 44	51·8		10	3 21	42·2			
				1934	*2 10	65·3	26·1	12	2 29½	56·8	35·1	20·0	27·6
	Nord	Paris-Lille	156·0	1914	2 53	54·1		9	3 00	52·0			
				1934	2 42	57·8	6·8	11	2 47	56·0	7·7	22·2	15·0
	Nord	Paris-Brussels	193·1	1914	3 55	47·2		6	4 12½	45·9			
				1934	†3 03	63·3	34·1	10	3 18½	58·4	27·2	66·7	42·0
	Est	Paris-Nancy	219·0	1914	4 15	51·5		10	4 38	47·3			
				1934	3 36	60·8	18·1	12	4 10	52·3	10·6	20·0	15·3
	Nord	Paris-Liége	226·7	1914	4 36	49·3		8	5 21	42·4			
				1934	3 50	59·1	19·9	8	4 24	51·5	21·4	*Nil*	10·7
	P.O.	Paris-Nantes	267·7	1914	5 36	47·8		6	6 02½	42·0			
				1934	4 40	57·4	20·1	6	5 12	51·5	22·6	*Nil*	11·3
	Est	Paris-Strasbourg	312·2	1914	6 52	45·5		9	7 33	41·4			
				1934	5 17	59·2	30·1	11	5 54	52·7	27·3	22·2	24·8
	P.L.M.	Paris-Lyons	317·3	1914	6 41	47·5		10	7 41	41·3			
				1934	*4 50	65·7	38·3	16	6 03	52·5	27·1	60·0	43·6
	Est	Paris-Basle	326·3	1914	7 33	43·2		9	8 02	40·6			
				1934	6 07	53·3	23·1	10	6 50	47·7	17·5	11·1	14·3
	P.O.	Paris-Bordeaux	362·0	1914	†6 51	52·6		10	7 43	46·9			
				1934	†5 55	61·2	16·3	10	6 54	52·4	11·7	*Nil*	5·9
	P.L.M.	Paris-Marseilles	535·9	1914	†11 50	45·4		7	12 58	41·4			
				1934	†9 15	58·0	27·8	10	10 58	48·9	18·1	42·9	30·5
Germany	State	Berlin-Halle	100·4	1914	1 50	56·6		28	2 03	49·0			
				1934	†1 32	65·5	15·7	20	1 53½	53·1	8·4	—28·6	—10·1
		Berlin-Leipzig	102·2	1914	1 56	52·9		16	2 06½	48·5			
				1934	†1 35	64·5	21·9	16	1 53½	54·0	11·3	*Nil*	5·7
		Berlin-Dresden‖	109·3	1914	2 19	47·2		14	2 38	41·5			
				1934	1 53	58·0	22·9	12	2 18½	48·1	15·9	—14·3	0·8
		Berlin-Hamburg	178·1	1914	3 14	55·1		14	3 35½	49·6			
				1934	*2 18	77·4	40·5	14	3 06½	57·3	15·5	*Nil*	7·8
		Berlin-Breslau	204·6	1914	4 05	50·1		12	4 49	42·5			
				1934	3 52	52·9	5·6	14	4 13½	48·4	13·9	16·7	15·3
		Berlin-Nuremberg	295·4	1914	6 21	46·5		9	7 07	41·5			
				1934	†5 25	54·5	17·2	9	6 48	43·4	4·5	*Nil*	2·3
		Berlin-Frankfort	335·3	1914	7 08	47·0		12	8 14	40·7			
				1934	†6 26	52·1	10·9	13	7 28	44·9	10·3	8·4	9·4
		Berlin-Cologne	342·1	1914	7 44	44·2		14	8 28½	40·3			
				1934	†6 15	54·7	23·8	14	7 25	46·1	14·4	*Nil*	7·2
		Berlin-Königsberg	365·7	1914	7 24	49·2		12	8 33½	42·7			
				1934	7 01	52·1	5·9	10	7 50	46·7	9·4	—16·7	—3·7
		Berlin-Munich	418·7	1914	8 41	48·2		15	10 18½	40·6			
				1934	†7 32	55·6	15·4	12	9 37	45·3	11·6	—20·0	—4·2
Italy	State	Turin¶-Milan	91·3	1914	2 16	40·3		12	2 33½	35·7			
				1934	1 43	53·2	32·0	14	2 11½	41·6	16·5	16·7	16·6
		Rome-Naples	154·8	1914	4 00	38·7		11	4 19	35·9			
			§133·0	1934	2 45	48·8	26·1	18	3 19	40·1	11·7	63·6	37·7
		Milan-Venice	164·7	1914	4 15	38·8		12	4 47	34·4			
			‡165·8	1934	2 58	55·9	44·1	14	3 37½	45·7	32·8	16·7	24·8
		Rome-Genoa	311·2	1914	9 30	32·8		10	10 31	29·6			
				1934	7 03	44·1	34·4	14	7 53½	39·4	33·1	40·0	36·5
		Rome-Milan	413·3	1914	11 50	34·9		10	13 21	31·0			
			§388·3	1934	8 20	46·6	33·5	14	9 26½	41·1	32·6	40·0	36·3

* Railcar service. † Extra fare train. ‡ To and from new station in Milan. § By new *direttissima* route. ‖ Neustadt station. ¶ Porto Susa station.

them over a route 193·1 miles in length. The nearest approach is the 57·3 m.p.h. of the 14 expresses on the Berlin-Hamburg service of the German State Railway, greatly helped, of course, by the 77·4 (westbound) and 76·3 (eastbound) m.p.h. average speeds of the Flying Hamburger railcar. The maximum service speed rise has taken place on the Etat Paris-Havre route, where the gain is 35·1 per cent., also much assisted by the four daily Bugatti railcar journeys, two in each direction daily. The Paris-Brussels service is 27·2 per cent. quicker and 67 per cent. more frequent than in 1914; the Paris-Strasbourg service gains 27·2 per cent. in speed and 22·2 per cent. in frequency; and a witness to the accelerative energy in recent years of the P.L.M. Company is found in the 27·1 per cent. service speed increase between Paris and Lyons, coupled with a 60 per cent. increase in frequency. Here again the daily Bugatti high speed railcar service in each direction provides assistance to the figures. It will also be noted that every French service tabulated up to 362 miles in length, with one exception, shows an average service speed of well over 50 m.p.h., whereas no British service of over 193·7 miles has the same distinction.

In Germany there have also been substantial improvements in average journey speed, though, as previously mentioned, attention has been devoted principally to certain selected "FD" services, with the result that average service speeds have not been raised to quite the same degree as in France. In several cases there has been a reduction in the frequency of service, as compared with pre-war days. Too much stress should not be laid, however, on the frequency of such services as Berlin-Halle and Berlin-Leipzig; Halle and Leipzig, both being at the northern end of lengthy main lines leading from the south and south-west to Berlin, have an admirable daily express service from Berlin, but a very poor one in the opposite direction, as most of the expresses to Berlin leave in the early hours of the morning, or the late afternoon or evening. There are no other features of particular note about the German section of Table C.

As previously indicated, the most startling changes have taken place in Italy, though admittedly from a very low standard of pre-war speed. Reductions in average journey time of an hour between Rome and Naples, 70 min. between Milan and Venice, 2 hr. 37 min. between Rome and Genoa, and all but 3 hr. between Rome and Milan, witness to the upheaval which has taken place in the time-tables. More than an hour of the Rome-Milan improvement, of course, is attributable to the inauguration of the Florence-Bologna *direttissima*, with its cut of 25 miles in distance, virtual elimination of the tremendous gradients of the old Pistoia route, and electric traction. The first of the *direttissima* projects to be brought into use, from Rome to Naples, has similarly influenced the Rome-Naples times, practically the whole of this route being new; but the Rome-Genoa and Milan-Venice accelerations are entirely due to the raising of running speeds, except for the partial help of electrification in the former case. In almost every case, also, substantial increases have taken place in the frequency of service, the average frequency of the services tabulated being now greater than that of either Britain or Germany, and considerably greater than in France, which specialises increasingly in "omnibus" express trains of immense weight, whereas the tendency in Italy has been more in the direction of developing fast services of comparatively light weight, like the "FD" trains in Germany.

The final Table, D, presents in a summarised form the figures from Table C. The services have been grouped in three zones of distance, those less than 160 miles in length, those from 160 to 320 miles, and those over 320 miles. For each of the four countries the journey speeds of the fastest trains have then been averaged, followed by average frequency figures, and, last of all, a mean figure for the average journey speeds in each distance zone, which, as previously emphasised, is the most important characteristic. In this matter of average service speeds of the services tabulated, it will be seen that France now takes the lead, followed by Germany, which in turn is ahead of Great Britain by a narrow margin. In frequency of express service Italy comes first, roughly tieing with Great Britain and Germany in services up to 160 miles in length, and with Great Britain only in the 160 to 320 miles range; but in the zone above 320 miles the frequency of service in Great Britain is considerably less than in any of the other three countries. It may be argued, now that interavailability of tickets now operates in Great Britain, that if the services by all routes between, say, London and Glasgow, were shown, Great Britain would have a considerable superiority in frequency; as, however, the trains of the various pooled services in this country still start in groups at their old competitive times, the passenger is no better off than before in regard to choice of departure time, so that frequency of service cannot be computed on the combined basis indicated. As regards the average of fastest times on the tabulated services, France and Germany tie for the lead in the two shorter zones, but France reigns supreme in the zone above 320 miles, Britain throughout being in the third place, and having clearly lost her speed supremacy of the decade prior to the war. And, as the final percentage increases show, this has been due to the way in which the speed of British express train services, with one or two exceptions, has done little better than to stand still during these two decades, while such tremendous advances have been made in the journey speeds of the countries on the mainland of Europe.

[We comment editorially on this subject on page 1012.—ED. *R.G.*]

TABLE D.—SUMMARY OF EUROPEAN TRAIN SERVICE IMPROVEMENTS, 1914 AND 1934

Length of Journey	Year	Average Speed of Fastest Trains				Average Number of Trains in Service				Average Service Speeds			
		Britain	France	Germany	Italy	Britain	France	Germany	Italy	Britain	France	Germany	Italy
		m.p.h.	m.p.h.	m.p.h.	m.p.h.	No.	No.	No.	No.	m.p.h.	m.p.h.	m.p.h.	m.p.h.
Under 160 miles	1914	54·2	55·7	52·2	39·5	15·6	9·7	19·3	11·5	49·0	50·1	46·3	35·8
" "	1934	55·8	62·6	62·7	51·0	16·2	11·3	16·0	16·0	50·5	57·5	51·7	40·9
160 to 320 miles	1914	53·4	48·1	50·6	38·8	13·2	8·2	11·7	11·0	47·6	43·4	44·5	32·0
" "	1934	55·7	61·0	61·6	52·4	15·0	10·5	12·3	14·0	49·1	53·2	49·7	42·6
Over 320 miles	1914	48·1	47·1	47·2	34·9	7·8	8·7	17·6	10·0	45·1	43·0	41·4	31·0
" "	1934	48·9	57·5	53·6	46·6	8·5	10·0	16·3	14·0	45·8	49·7	47·7	41·1
Average, all services ..	1914	52·3	50·5	49·7	37·1	12·3	8·7	14·6	11·0	47·5	44·2	43·7	33·6
" "	1934	54·0	60·5	58·7	49·7	13·7	10·6	13·4	14·8	48·6	53·3	48·7	41·6
Increase, per cent., 1914-34		3·2	19·8	18·1	33·9	11·4	21·8	8·2	34·5	2·3	20·6	11·4	23·8

AMERICAN STREAMLINED STEAM LOCOMOTIVE.—One of the well-known Hudson-type express locomotives on the New York Central has been built on streamline principles and is illustrated on page 1030 of this issue. The streamlining has been designed to reduce air resistance to a minimum, but, to permit of ready access to the moving parts, the wheels have been left partly uncovered. It is calculated that at speeds of 70 to 90 m.p.h. the streamlining will effect a decrease in head air resistance of about 35 per cent. An additional advantage is that the cylinders, auxiliary apparatus and pipes, being enclosed, will be protected from heat losses, an important consideration during the very cold weather experienced in North American winters. The locomotive is equipped throughout with roller bearings. Mr. F. E. Williamson, President of the New York Central, in announcing the advent of this locomotive and the tests to which it is being subjected, remarked that it would be evidence of the company's belief that the day of the steam locomotive is not past. The locomotive has been named *Commodore Vanderbilt*, after the founder of the New York Central Lines.

Ten Years of Progress in Permanent Way Practice Abroad

(*See editorial note on page* 1010.)

At a meeting of the Permanent Way Institution in London on December 12, Mr. C. E. R. Sherrington, Secretary of the Railway Research Service, delivered an address on "Ten Years of Progress in Permanent Way Practice Abroad." Beginning with the subject of ballast, he emphasised the almost universal recognition of the fact that good drainage is all-important if maintenance costs are to be kept down, and instanced an example in America of two parallel railways, only one of which had ample side ditches whereas the other had not. During a severe rain storm the latter was completely washed out in a dozen places, whereas no train delays occurred on its well-ditched neighbour.

Except in Germany and Italy little attention is paid to exact analyses of ballast, but in these countries the degree of disintegration and resistance to weather are carefully measured. Slag and broken stone are now everywhere regarded as the best form of ballast, though, on the score of cheapness, gravel is still largely used in certain areas. The concrete slab form of permanent way, owing to its high initial cost, has not been extended, despite the fact that it is satisfactory and costs nothing in maintenance. The estimated cost per mile is placed at $72,400 using 100 lb. rails, as compared with $32,000 for the present form of American track with 131 lb. rails. Many railways abroad have put into service during the years of depression large numbers of scientifically designed ballast wagons for the purpose of reducing handling costs. The following table shows the ballast purchases and costs of the American railways since 1925:—

Year	Cost, incl. freight	Cu. yd.	Per cent. ballast purchased to operating revenue
1925-9 av.	23,000,000	27,000,000	0·38
1930 ...	19,000,000	24,000,000	0·35
1931 ...	13,000,000	18,000,000	0·30
1932 ...	6,000,000	8,500,000	0·22

About ten per cent. of American railway mileage was gravel ballasted in 1932, and 600,000 cubic yards of this material were used.

Sleepers

Wooden sleepers are universal in America and Canada and still preponderate elsewhere. Figures showing the percentage of steel sleepers to the total number in the track indicate that the steel sleeper has not been making much headway. In Belgium and Germany, where steelworks have not been operating to capacity in recent years, there is a tendency to increase the use of steel sleepers.

As showing the economy of well drained and ballasted track, the number of sleepers inserted per track mile per annum are significant. The five year average (1929-1933) for many American lines varied between 100 and 327. Corresponding figures for the Lehigh Valley and for the Lackawanna with their excellent tracks were 60 and 71. The five year average for the percentage of sleepers renewed to sleepers in track varied from 2·1 per cent. on the Lehigh Valley to 10 per cent. on the Southern and the Western Pacific. Spot renewals are generally carried out in the United States rather than "out of face" or wholesale renewal of track. The former method is claimed to ensure getting an absolutely full life out of every sleeper and obviates speed restriction.

The following is a table of sleeper costs per unit on certain railways:—

	Approx. value in British currency
	s. d.
United States (1933):	
New York, New Haven & Hartford	7 0
Lehigh Valley	7 6
Pennsylvania	7 9
Illinois Central	4 8
Great Northern	4 9
Southern Pacific	5 0
Belgian National Railways (1933)	
Oak	4 6
Metal	14 0
Czechoslovak State Railways (1932):	
Fir	4 6
Danish State Railways (1932) fir	4 9
Jugoslavia (av. export price, oak and beech, 1929)	3 10

Rails

Efforts are being made to standardise 112 lb. and 131 lb. rails throughout the U.S.A., but the Pennsylvania has recently adopted 152 lb. rails for its heaviest traffic. The steadily growing use of heavier rail is evidenced by the following figures of rail production in the United States:—

	1923 (Long tons)	1933
Total	2,904,516	416,296
100 lb. per yd. and over ...	1,465,850	310,794
Alloy-treated steels ...	2,142	437

The American railways suffer seriously from transverse fissures, the number reported up to the end of 1932 being over 65,000. In that year 7,054 were reported. The A.R.A. rail fissure detector car tested 6,600 miles of track in 1933, bringing the total during five years up to 23,181. The rental charged per diem is $85 (about £17).

Rail battering has been the subject of detailed investigation and the building up and heat treating of rail ends has been widely adopted. The use of intermediate manganese steel rails is extending, and the heat treatment of rails by the Bethlehem "lead bath" process is receiving attention. The 39 ft. rail length is still preferred in America, though a few lines use rails varying from 45 ft. to 79 ft. In Europe, where the heaviest rail is the new 125 lb. section of the P.L.M., rail lengths of 18 to 24 metres are common, and in Germany at the beginning of 1934 no less than 4,163 track miles were laid with 30-metre rails.

End to end rail welding to eliminate the joint is being extended in Germany and certain other countries. In America, where the staggered joint is used, it has been calculated that the floor of a freight car moves vertically up and down about 17 miles on the 4,000-mile journey from San Francisco to New York. Except in Great Britain where the two-bolt fishplate is becoming standard, the tendency seems generally to be to use larger fishplates of the angle bar type. In Germany and certain other countries the Geo type of soleplate and rail fastening has been adopted, and although expensive gives many of the advantages of a chaired track. Anti-creep devices are largely favoured by foreign railways.

The comparatively heavy train density per track mile (see table below) in Great Britain makes the employment of certain types of permanent way appliances as used on American and continental railways virtually impossible in this country except on Sundays, although the introduction of the motor economic system has proved productive of substantial economies. This system is extending rapidly throughout the world.

Train-Miles per Running Track-Mile per Annum, 1932

L.M.S.R.	10,600
L.N.E.R.	8,890
G.W.R.	9,530
S.R....	14,800
Nord	8,660
P.L.M.	7,470
German Railway	7,960
Belgian National Railway ...	8,380
United States (cl. I Rlys.) ...	2,865
Pennsylvania	4,250
Long Island	12,000

Mechanical methods of relaying and ballast cleaning are much used abroad, and on the Pennsylvania during the four years 1930 to 1933 nearly 1,700 miles of inter-track and shoulder ballast were cleaned by mechanical equipment. Power-driven tie tampers are popular in the United States and France, and shovel packing has spread from Great Britain to these countries. Rail corrugation has come into prominence of late, especially in America, and a device has been adopted by the Lehigh Valley consisting of a large grinding car which can level off from four to nine miles of track a day. The speed of operation is about 40 to 45 m.p.h., and 13 to 25 trips suffice to even out the corrugations.

The use of many small appliances has extended considerably. More than 40 American railways were using flange lubricators by 1929, a practice which has since been widely adopted in this country. The Southern Railway by 1934 had 800 in service, lengthening the life of the rail by between 150 and 600 per cent.

Mr. Sherrington concluded by urging a continuation and extension of the best standards of permanent way, because he believed a well maintained and clean track would pay for itself over and over again.

RAILWAY AND OTHER MEETINGS

THE BRITISH AUTOMATIC CO. LTD.

The ordinary general meeting of the British Automatic Co. Ltd. was held at Winchester House, Old Broad Street, E.C.4, on December 14, the Chairman and Managing Director, Major R. D. Kingsdown Curling, M.C., presiding.

The Secretary, Mr. W. A. Ballard, read the notice convening the meeting and the auditors' report.

In moving the adoption of the report and accounts, the Chairman first drew attention to the assets side of the balance sheet. Machines and fittings to the value of £4,750 had been purchased during the year and £800 had been written off on account of machines scrapped. There was a slight increase under the head of freehold and leasehold premises, plant, machinery, &c., due to the purchase of a number of light vans and cars to replace others which were worn out and had been sold.

Investments in subsidiary companies and other investments remained as before. Additional sweetmeat stocks for new machines placed out and to meet the increased demand upon those already in service had caused an increase of £505 under stock of sweetmeats, stores, &c.

It had been considered advisable in previous years to reserve fully the amount due by the Associated Automatic Machine Corporation Limited, but since the legal action which had overshadowed that concern for three years had now been finally decided in its favour by the House of Lords, this reserve had been transferred to contingency reserve on the other side of the balance sheet. Investment in British Government securities appeared in the accounts for the first time for five years, as the board had decided to invest £31,316 in £30,000 of 3½ per cent. War Stock. In consequence, cash at bankers and in hand was down by £9,316, but the company's net financial position was £22,000 better than a year ago. Discount on debenture stock and debenture issue expenses, written down by £7,738, stood at £15,000.

On the other side of the balance sheet, the amount due to trade creditors was up by only £4,261, since from the increase of £13,393 shown under sundry creditors there could be deducted the provision against losses of subsidiary companies—actually a reserve and not a liability.

Depreciation and renewals account stood at £72,000 after a net allocation of £10,000. Contingency reserve had been increased from £4,500 to £15,000 by a net allocation from profit and loss account of £10,500. The profit and loss account showed a trading profit of £59,204, compared with £47,113 the year before, and the net profit, subject to depreciation on automatic machines, was up by £9,541, having increased from £14,720 to £24,261 after charging £20,000 debenture interest in both years. Allocations of £10,800 10s. to depreciation and renewals account and of £10,714 18s. 2d. to contingency reserve had been made this year, so that these items now stood at £72,000 and £15,000 respectively. Balance on profit and loss account, which the directors recommended to be carried forward, had therefore been increased from £5,265 to £8,011.

The company had taken full advantage of the improved trading conditions during the year under review, trading profit having increased by £12,091. This was due partly to the policy of minimising expenses as far as was consistent with efficiency and partly to increased takings in every section of the business—a tendency which had continued up to the last returns received. Increased passenger traffic due to the enterprise of the railways in reducing fares had benefited the takings of the company's machines. The quantity, quality and presentation of the chocolate and sweets supplied had also been substantially improved, both factors leading to increased railway takings. The Chairman thought the company could claim always to have retained the goodwill of the railways, and relations with them were quite satisfactory. Everything possible was done to meet the wishes of the officials, who in return showed a desire to help the company achieve the best results in their mutual interests.

During the past five years the company had materially increased its activities with amusement and weighing machines on other sites. Nearly 49 per cent. of the total revenue, against 15 per cent. in 1928, had last year been derived from these extended operations. Many weighing machines had been installed in chain stores and chemists' shops. The public had come to regard the B.A.C. monogram on these instruments as a guarantee of accuracy and to understand the value of weight checking in the maintenance of health.

The Amusement Department now had 60 sites spread all over the country, many of which were operated in conjunction with prominent resorts and amusement caterers. Blackpool, Margate and Southend had welcomed the company's machines, and Mr. W. Butlin and Mr. Patrick Collins had expressed appreciation of their efforts and methods of business. Amusements now yielded 35·8 per cent. of revenue, compared with 11·8 per cent. in 1931 and 1932 and 16 per cent. in 1933.

The small associated company operating some 800 weighing machines in Belgium was now under new management and its results had improved by over 50 per cent. The manufacturing business of Reeves Limited also showed an encouraging improvement and was selling chocolate and confectionery to shops as well as supplying the automatic machines.

In conclusion, the Chairman said he considered the results for the year distinctly gratifying, and although the company was not yet in a position to pay any dividend, he thought the future could be anticipated with confidence.

The report and accounts were unanimously adopted.

THE RAILWAY CLUB:—On Friday, December 14, the 28th annual dinner of the Railway Club took place at Broad Street station Restaurant, London, with Mr. Kenneth Brown, the President, in the chair. The toast of "The Railway Club" was proposed by Mr. W. A. Willox, who gave a brief sketch of railways in the immediate future as he saw it, emphasising that in his view there would soon be a period of expansion rather than contraction, for the desire to travel had by no means yet been satisfied. The value of the Railway Club was therefore likely to be enhanced. In his reply, the President drew attention to the steady growth of the club, as evidenced by the record attendance at the dinner. Mr. Cecil J. Allen was then called upon to give an account of his experience on the recent record L.N.E.R. runs to Leeds and back, which he did with graphic detail. As a possible explanation of the sudden acceleration from 98 to 100 m.p.h. at the foot of the gradient down from Stoke, Mr. Allen mentioned that whereas the cut-off had been 40 per cent., thus entailing a very heavy demand on the boiler, it was suddenly notched up to 25 per cent. This, he said, by causing an appreciable reduction in back pressure at such a high speed, might possibly result in a net increase in the power of the locomotive. Mr. L. C. King-Wilkinson, proposing "The Officers and Committee," paid them a well-deserved tribute, and Mr. Lambert H. Bailey, the Treasurer, suitably responded. Mr. K. Ffitch proposed the toast of "The Visitors," to which Mr. D. V. Levien, of the Great Western Railway, replied. A much appreciated feature of the evening was an exhibition of cinema films, by Mr. L. T. Catchpole, depicting club visits during 1934, and the Isle of Man Railway.

NORTH-EAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS.—November 28 was the fiftieth anniversary of the inaugural meeting of the institution. It has been decided by the council that a series of functions in the form of a summer meeting should be held to celebrate the institution's jubilee. The summer meeting will be held on dates yet to be selected in June or July of 1935.

NOTES AND NEWS

Christmas Trees in German Trains.—A Christmas tree is to be put in every dining car in service on the German State Railway during Christmas season. Every tree will be decorated with lighted candles.

Improvements at Euston.—The L.M.S.R. brought into operation on Monday, December 17, a new passimeter booking office and electric train departure indicator at the entrance to Nos. 4 and 5 suburban platforms at Euston station.

Home Railway Dividend Dates.—The respective dates on which the four group railway companies are expected to announce their final dividends are :—February 11, Southern ; February 13, Great Western and London Midland & Scottish ; February 22, London & North Eastern.

L.M.S.R. Branch Closing.—The Sellafield and Moor Row branch, L.M.S.R., will be closed for passenger traffic as from Monday, January 7, when the following stations will be closed : Moor Row, Woodend, Egremont and Beckermet. The branch will continue in operation for freight traffic, and parcels traffic will still be dealt with at the four stations named.

Orange-on-Black Destination Indicators.—Destination boards in orange lettering on a black ground have just been introduced experimentally on certain buses and coaches of London Transport, with a view to ascertaining if they improve visibility. The L.N.E.R. has for some time been using this colour combination on engine destination boards in the Great Eastern suburban area, and London Transport has recently equipped District Line coaches, as they pass through the shops, with " Not Stopping At " boards in black letters on a bright yellow ground.

The Week's Road Accidents.—The Ministry of Transport return for the week ended December 15 of persons killed or injured in road accidents is as follows :—

	Killed	Deaths resulting from previous accidents	Injured
England	101 (105)	31 (31)	3,690 (3,569)
Wales ...	7 (4)	2 (1)	160 (146)
Scotland	19 (12)	5 (3)	333 (307)
	127 (121)	38 (35)	4,183 (4,022)

The total fatalities of the week, as the result of road accidents, were therefore 165, as compared with 156 for the previous week.

Irish Branch Lines Closing.—The Great Southern Railways Company has given notice of its intention to cease, from December 31, running passenger trains on the Limerick (Patrickswell) and Charleville branch, and to substitute a passenger road service to and from Limerick and Cork. The goods traffic will, however, be dealt with as usual. Similar notice has been given in respect of the Westport and Achill branch, which is to be closed to passenger and mixed trains on the same date and a bus service substituted. One freight train will run each weekday.

Air-Conditioning.—The air-conditioning of passenger vehicles in the U.S.A. is proceeding rapidly. At the various shops of the Pullman Company 35 cars a week are being equipped, and it is expected that the number will soon be brought up to 70 a week.

Canadian Pacific Wages.—The restoration of 5 per cent. of the 15 per cent. cut in the wages of 75,000 employees in Great Britain, Europe, and Canada, was announced by the Canadian Pacific Railway at Liverpool, on Tuesday, states *The Times*. The restoration takes effect partly on January 1 and partly on May 1.

A Record Locomotive Mileage.—A 4-6-4 express locomotive of the Chicago, Milwaukee, St. Paul & Pacific Railroad, No. 6415, ran a total of 19,200 miles during October. According to the *Railway Age*, the previous record was held by an engine of the same type on the same line, which ran 18,390 miles during one month in 1933.

Ambulance Presentation at Bristol.—Mr. J. F. Lean, Principal Assistant to the General Manager, G.W.R., was the guest of honour at the annual concert and supper held under the auspices of the Bristol ambulance class at the Cadena Café on the evening of November 29. The class, which is the second largest on the Great Western Railway system, numbers 224 members, and Mr. Lean distributed examination awards to the 220 successful students, and also the members of the ladies' first-aid class. The gathering was presided over by Mr. R. G. Pole, Divisional Superintendent, who, in congratulating the class on its progress, said many people thought that ambulance work was largely concerned with railway accidents, but this was not the case, and the majority of cases where railwaymen were called upon to render first aid were in connection with outside mishaps. He appealed to the women members of the staff to support their class.

The Duke of Gloucester Lays the Foundation Stone of the New Wellington Central Station.—One of the most important events in the visit of the Duke of Gloucester to New Zealand was the ceremony of laying the foundation stone of the new central station, which he duly performed on December 17. Speaking at the ceremony, the Premier, Mr. Forbes, said it was fitting that the Duke should lay the foundation stone, as His Majesty the King, when Duke of York, had laid the foundation stone of the railway administrative offices 33 years ago. Owing to the developments of the railways, he added, those offices were now inadequate and others were being incorporated in the new station building. The Duke of Gloucester, in his speech, expressed confident hopes for the success of the enterprise. The Royal trains which the Duke is using in New Zealand are described on page 1019.

Probable Closing of Midland Grand Hotel.—It has been known for some time that the L.M.S.R. was considering closing the Midland Grand Hotel, St. Pancras. The next meeting of the board of the L.M.S. is anticipated to reach a definite decision to close.

Train Wreck in Burma.—Telegrams from Rangoon report another instance of train wrecking, the Rangoon-Mandalay mail being derailed by the removal of fish-plates about 117 miles from Rangoon. The engine and several coaches left the line, one Burmese passenger was killed, and the engine crew and several passengers were injured. There were many such cases of deliberate wrecking in Burma in the past, but there have not been so many the last year or two.

New London Transport Station.—A new station at Queensbury, between Kingsbury and Canons Park on the Stanmore branch of the Metropolitan Line, was opened to traffic on Sunday last, December 16. The station, which is embodied in a block of flats and shops, has been erected on the estate which is being developed on the site of Stag Lane aerodrome. It is of simple design and is in keeping with the general style of the neighbouring buildings. On weekdays, 196 trains serve this new station, 91 of which run through to Baker Street ; on Sundays the service is 99 trains.

L.N.E.R. Carol Concert.—On Saturday last the L.N.E.R. Musical Society gave its annual carol concert at the Queen's Hall, London. The choir of 400 male voices and the London orchestra of 100 were under the conductorship of Mr. Leslie Woodgate. Mr. Sydney Harrington, F.R.C.O., was at the organ, assisted by Mr. Stanley E. Mace. The soloist was Miss May Blyth. The programme, which included many of the traditional carols and excerpts from Handel's and Mendelssohn's oratorios, was given a most enthusiastic reception by a large audience. The orchestral pieces were also greatly appreciated. Miss May Blyth's solos were most effective, particularly the aria " Rejoice Greatly," from " The Messiah." The familiar originality of Mr. Woodgate's conductorship was in evidence throughout. Additional interest was lent to some of the choral renderings by the introduction of a small choir of boys from the London Choir School. There was probably nothing that the audience enjoyed more, however, than joining in the singing of "O Come, All Ye Faithful " at the end

of the evening. At any rate, so it sounded! A tribute should also be paid to the excellent organisation of the concert, for which Mr. A. W. Headley, the energetic Honorary General Secretary of the Society, was largely responsible. Among those present were :—

Mr. William Whitelaw, Chairman, L.N.E.R., and Mrs. Whitelaw; Sir Charles A. Batho, and Mr. W. B. Gair, Directors, L.N.E.R.; the Danish Minister, and Countess Ahlfeldt-Laurvig; Sir Ralph L. Wedgwood, Chief General Manager, L.N.E.R.; and the following past and present officers of the L.N.E.R.:—Messrs. A. J. Brickwell, Estate and Rating Surveyor, Southern Area; E. A. Clear, formerly Divisional Superintendent, G.C. Section; P. J. Dowsett, Assistant Secretary; R. Gardiner, Assistant Superintendent, Eastern Section, Southern Area; A. L. Gibson, Continental Traffic Manager; J. McLaren, Secretary; C. H. Newton, Chief Accountant; Percy Syder, London City Manager; and G. F. Thurston, Divisional General Manager, Southern Area.

Closing of Shildon Yard and Electrified Lines.—As from January 7, 1935, the Shildon marshalling yard, near Bishop Auckland, L.N.E.R., will be closed. Before the war Shildon was the gathering ground for the bulk of the mineral traffic (coal, coke, and limestone) passing from the South-West Durham coalfield to the iron and steel works on Tees-side. For the conveyance of this traffic electric overhead traction, at 1,500 volts d.c., has been in operation since 1916 on the 16-mile section between Shildon yard and Newport yard. Since the war there has been a heavy reduction in the volume of traffic passing through Shildon yard, and at the present time the volume of traffic is barely one-seventh of that for 1913. There seems to be no prospect of a material increase, and it has been found advantageous to work the bulk of the mineral traffic from the collieries and quarries direct to destination. The electric working, which, with the diminished tonnage, has for some time been unremunerative, will be discontinued.

L.N.E.R. Secretary's Department Annual Dinner.—The twelfth annual dinner of the Secretary's Department was held at Liverpool Street Station Hotel on December 11. Mr. James McLaren, Secretary of the company, presided. Guests included Mr. G. F. Thurston, Divisional General Manager (Southern Area), Mr. C. H. Newton, Chief Accountant, and Mr. J. E. Ryan, Hotels Superintendent. In submitting the toast of the L.N.E.R. Mr. A. R. Lamb (Chief Clerk), referred to the improved outlook in the railway world and spoke optimistically of the future. Mr. Thurston replied in a characteristic speech. In proposing "The Chairman," Mr. G. A. H. Kennedy expressed, on behalf of the staff, appreciation of the courtesy and consideration invariably extended by their chief. Mr. McLaren, in his reply, thanked them for their continued loyalty under depressing conditions, and assured them that he would continue to do his utmost to promote their welfare and advancement, and hoped they would in due season participate in the expectant return of prosperous days for the company.

PARLIAMENTARY NOTES

Supply of Electricity to Railways

The House of Commons on December 13 resumed and concluded the Committee stage of the Electricity (Supply) Bill, consideration being given to amendments proposed to clause 4. This is the clause which empowers the Central Electricity Board to supply railway companies direct. (The earlier proceedings were reported in our *Electric Railway Traction Supplement* of December 14).

Sir Joseph Nall now moved the first of a series of amendments and said that their main object was that the supply given to railway companies for traction should not be used for any other purposes.

Mr. Hore-Belisha (Minister of Transport) said he did not think the hon. member would contend that it was unreasonable if electricity supplied by the board for traction purposes were used for the ordinary purposes of the railways, such as lighting, heating, signalling, shunting, and so forth. But he could see the force of the objection which Sir Joseph had in his mind and he would undertake to try before the report stage of the Bill to discover an amendment which would meet the point. He could positively assure the hon. member that no power was given under this clause to break any existing contracts between railway companies and authorised undertakers.

Sir Robert Horne (in the course of further discussion), said he hoped the Minister would keep in mind that the kind of proposal which was made in Sir Joseph Nall's amendments sought to give perpetuation of contracts to individual undertakers. That did not happen in ordinary life. There was no right to a perpetual contract on the part of any person in ordinary business, and it was an unconscionable suggestion that contracts between the railways and electricity undertakers should be perpetual. Every temptation ought to be given to the railway companies to move by electricity rather than by other forms of power, but steam had still great potentialities. There was also diesel traction which offered great attractions to the railway companies. If it was made difficult for the railway companies to take electricity, they might be forced to take up other forms of power.

Mr. Bailey raised the question of compensation for existing undertakers.

Sir Joseph Nall withdrew his amendment.

Mr. Parkinson moved an amendment which he said was in keeping with the terms of the Electricity (Supply) Act, 1926, under which authorised undertakers were permitted to compensate persons who became redundant through the closing down of electricity stations. He was now asking that the same provisions should apply to railway companies who might close down generating stations in order to take their electricity from the Central Electricity Board.

Mr. Dobbie, in supporting the amendment, gave instances of railway companies having closed down generating stations, as for example the Great Western Railway at Fishguard, the London & North Eastern at Methil, Stratford, Woodford, and Leicester, and the London Midland & Scottish at Clifton and Glasgow Central. There were many places where generating stations might be closed. The total staff in railway generating stations and substations was, he believed, about 2,000.

Mr. Amery said he would not see any objection to the amendment as long as it was clearly understood that the compensation was strictly confined to that which might arise directly out of a change in the law introduced in clause 4 of the Bill.

Mr. Hore-Belisha said that Mr. Amery had shown that the railway companies had no objection to the acceptance of the principle, being anxious to be perfectly fair to their employees. In these circumstances, he accepted the amendment, which was agreed to.

Mr. G. Braithwaite spoke on the question of finance, with regard to interest and sinking fund on the cost of the grid and the manner in which it would be borne.

Mr. Hore-Belisha said he would draw attention to the first sub-section of this clause and to the first proviso. There it would be seen that the Central Electricity Board might supply electricity direct to any railway company on such terms and at such prices as might be agreed, provided that the commissioners were satisfied that the price would not result in any financial loss to the board. Therefore he did not think the hon. member need fear that this Bill would be used as a precedent for other boards subsequently to be constituted selling their supplies at a loss without any regard to the charges that they might have to meet for interest or sinking fund.

Sir Robert Horne said that the argument of his hon. friend who put the question proceeded as if the railway companies were already customers of the various undertakers for electricity and that all railway companies were having a large supply of power for traction from those electrical undertakings. There was nothing of the kind. There was only one railway company which had a supply which was appreciable. If they wished to get other railway companies as customers they had to tempt them, and it was no good putting up conditions which were not attractive.

The question that clause 4 stand part of the Bill was agreed to.

The Committee stage was concluded, and the Bill was ordered to be reported to the House.

RAILWAY AND OTHER REPORTS

Great Northern Railway (Ireland).—The directors have decided to defer consideration of the payment of a dividend on the consolidated 4 per cent. guaranteed stock for the half-year ending December 31, 1934, until the accounts for the year have been made up and audited.

Tube Investments Limited.—For the year to October 31 turnover in all sections of the business exceeded the directors' anticipations, and the factories worked at increasingly high pressure throughout the year. The increase in turnover coincided with the completion of the reorganisation scheme, and the full employment of capital spent during recent years to improve production, both in cost and quantity, brought about a substantial increase in profits. Net revenue of the parent company rose from £224,286 for 1932-33 to £363,815. The allocation to reserve is increased from £28,583 to £102,757, and the dividend on the ordinary shares is to be raised from 8 per cent. to 10 per cent. This absorbs £155,709, the relative dividend on the liaison ordinary shares requires £38,750, and preference dividends £44,944. The balance forward is then increased from £84,465 to £106,119.

East Kent Road Car Co. Ltd.—Net profits of this company, which is controlled jointly by Tilling and British Automobile Traction Limited and the Southern Railway, for the year ended September 30 amounted to £41,503 (against £26,168 for the preceding year), to which is added £5,998 brought forward, making together £47,501. The sum of £1,000 is again added to general reserve, and the dividend on the ordinary shares is raised from 4 to 6 per cent. The balance carried forward is £12,500.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 50th Week			Totals to Date		
	1934	1933	Inc. or Dec.	1934	1933	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,941¼ mls.)						
Passenger-train traffic...	426,000	414,000	+ 12,000	23,626,000	23,226,000	+ 400,000
Merchandise, &c. ...	478,000	463,000	+ 15,000	22,403,000	21,051,000	+1,352,000
Coal and coke ...	295,000	331,000	− 36,000	11,455,000	11,071,000	+ 384,000
Goods-train traffic ...	773,000	794,000	− 21,000	33,858,000	32,122,000	+1,736,000
Total receipts	1,199,000	1,208,000	− 9,000	57,484,000	55,348,000	+2,136,000
L.N.E.R. (6,339 mls.)						
Passenger-train traffic...	276,000	270,000	+ 6,000	15,324,000	15,072,000	+ 252,000
Merchandise, &c. ...	348,000	340,000	+ 8,000	15,878,000	14,871,000	+1,007,000
Coal and coke ...	282,000	295,000	− 13,000	11,447,000	10,657,000	+ 790,000
Goods-train traffic ...	630,000	635,000	− 5,000	27,325,000	25,528,000	+1,797,000
Total receipts	906,000	905,000	+ 1,000	42,649,000	40,600,000	+2,049,000
G.W.R. (3,750¾ mls.)						
Passenger-train traffic...	181,000	180,000	+ 1,000	10,036,000	10,010,000	+ 26,000
Merchandise, &c. ...	191,000	190,000	+ 1,000	9,016,000	8,512,000	+ 504,000
Coal and coke ...	111,000	127,000	− 16,000	4,965,000	4,911,000	+ 54,000
Goods-train traffic ...	302,000	317,000	− 15,000	13,981,000	13,423,000	+ 558,000
Total receipts	483,000	497,000	− 14,000	24,017,000	23,433,000	+ 584,000
S.R. (2,172 mls.)						
Passenger-train traffic...	254,000	247,000	+ 7,000	14,473,000	14,236,000	+ 237,000
Merchandise, &c. ...	65,500	66,500	− 1,000	3,190,000	3,080,000	+ 110,000
Coal and coke ...	39,500	44,500	− 5,000	1,551,000	1,487,000	+ 64,000
Goods-train traffic ...	105,000	111,000	− 6,000	4,741,000	4,567,000	+ 174,000
Total receipts	359,000	358,000	+ 1,000	19,214,000	18,803,000	+ 411,000
Liverpool Overhead ... (6¼ mls.)	1,140	1,192	− 52	56,811	56,634	+ 177
Mersey (4¼ mls.) ...	4,358	4,454	− 96	203,392	200,078	+ 3,314
*London Passenger Transport Board ...	557,600	534,200	+ 23,400	12,774,800	12,542,900	+ 231,900
IRELAND						
Belfast & C.D. pass. (80 mls.)	1,737	1,685	+ 52	123,339	124,574	− 1,235
,, ,, goods	564	598	− 34	26,035	26,177	− 142
,, ,, total	2,301	2,283	+ 18	149,374	150,751	− 1,377
Great Northern pass. (562 mls.)	8,200	7,450	+ 750	491,250	386,800	+ 104,450
,, ,, goods	9,850	9,600	+ 250	431,100	357,300	+ 73,800
,, ,, total	18,050	17,050	+ 1,000	922,350	744,100	+ 178,250
Great Southern pass. (2,158 mls.)	21,940	22,574	− 634	1,188,628	1,170,401	+ 18,227
,, ,, goods	44,797	38,441	+ 6,356	1,684,650	1,580,289	+ 104,361
,, ,, total	66,737	61,015	+ 5,722	2,873,278	2,750,690	+ 122,588

* 24th week, the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are, however, adjusted for comparative purposes

British and Irish Railways Stocks and Shares

Stocks	Highest 1933	Lowest 1933	Prices Dec. 19, 1934	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	55½	31	51	—
5% Con. Prefce. ...	109¾	69½	116	+½
5% Red.Pref.(1950)	109¼	87½	112½	—
4% Deb.	108 15/16	99¼	115*	−1
4½% Deb.... ...	108	100¾	116½*	−1
4½% Deb.... ...	116	106	127½*	—
5% Deb.	128	117¼	133½*	—
2½% Deb.... ...	65	60	73½*	—
5% Rt. Charge ...	124	111½	132½*	−1
5% Cons. Guar. ...	122	103	130½	—
L.M.S.R.				
Ord.	29⅞	12⅛	21	—
4% Prefce. (1923)	51	17	49	−½
4% Prefce. ...	72	33¼	85½	—
5% Red. Prf. (1955)	93	47¼	104	—
4% Deb.	103¼	84½	108	—
5% Red.Deb.(1952)	114	105	117½	—
4% Guar.	97¼	68⅝	104½	—
L.N.E.R.				
5% Pref. Ord. ...	22½	7¾	14½	−½
Def. Ord.	10¾	4⅛	7¼	−⅛
4% First Prefce. ...	65½	19⅜	71	+½
4% Second Prefce.	40½	12¼	30½	−½
5% Red.Pref.(1955)	83¾	27	90½	+1
4% First Guar. ...	94¾	58¼	101	—
4% Second Guar.	89¼	48	95	—
3% Deb.	77	60¼	84	—
4% Deb.	102¾	80	107½	—
5% Red.Deb.(1947)	112	102½	116	—
4½% Sinking Fund Red. Deb.	107½	98¾	109½	—
SOUTHERN				
Pref. Ord.... ...	71	27¾	78	−1
Def. Ord.	24⅝	9⅜	22½	−½
5% Prefce. ...	107 11/16	74	117	+1
5% Red.Pref.(1964)	107¾	78⅞	114½	—
5% Guar. Prefce.	124¼	102¾	131½	—
5% Red.Guar.Pref. (1957)	115⅝	103½	118	—
4% Deb.	107½	96¾	113½	—
5% Deb.	126½	114¼	132½	—
4% Red. Deb. 1962–67	107¼	100	112	—
BELFAST & C.D.				
Ord.	6	4	5¼	+¼
FORTH BRIDGE				
4% Deb.	99½	95½	109½*	−2
4% Guar. ...	98½	94	108½*	−2
G. NORTHERN (IRELAND)				
Ord.	7½	3½	6	—
G. SOUTHERN (IRELAND)				
Ord.	28	16	15	—
Prefce.	24	12⅛	16	—
Guar.	42	16¾	47	+1
Deb.	60	30⅞	66½	−¼
L.P.T.B.				
4½% "A" ...	117⅞	112	123½	—
5% "A"	127¼	119¼	134½	+2
4½% "T.F.A." ...	111¼	106	111½	—
5% "B"	122½	114	127½	—
"C"	86¾	74½	96	+1
MERSEY				
Ord.	16¼	5	10	—
4% Perp. Deb. ...	83	63⅞	94	—
3% Perp. Deb. ...	62	51	68½	—
3% Perp. Prefce....	50⅝	27	48½	—

* ex dividend

OFFICIAL NOTICES

South Indian Railway Company Limited.

THE Directors are prepared to receive Tenders for the supply of:—
GIBS AND COTTERS.

Specifications and Forms of Tender will be available at the Company's Offices, 91, Petty France, Westminster, S.W.1.

Tenders, addressed to the Chairman and Directors of the South Indian Railway Co. Ltd., marked "Tender for Gibs and Cotters," with the name of the firm tendering, must be left with the undersigned not later than 12 noon on Friday, the 4th January, 1935.

The Directors do not bind themselves to accept the lowest or any Tender.

A charge, which will not be returned, will be made of 10s. for each copy of the Specification.

Copies of the drawings may be obtained at the Offices of the Company's Consulting Engineers, Messrs. Robert White & Partners, 3, Victoria Street, S.W.1.

A. MUIRHEAD,
Managing Director.

91, Petty France,
Westminster, S.W.1.
19th December, 1934.

Universal Directory of Railway Officials and Railway Year Book

40th Annual Edition, 1934-35

Price 20/- net.

THE DIRECTORY PUBLISHING CO. LTD.
33, Tothill Street, London, S.W.1.

CONTRACTS AND TENDERS

The L.N.E.R. announces that, in connection with the programme of track and bridge renewal, contracts have been placed for 756,000 sleepers, 5,000 loads of crossing timbers and 1,850,000 gall. of creosote oil.

Tourist Trains for the L.N.E.R.

The L.N.E.R. has placed orders for further vehicles to be made up into one complete train and spares of the special tourist and excursion type as described in THE RAILWAY GAZETTE for July 28, 1933, as follow:—Metropolitan-Cammell Carriage & Wagon Co. Ltd.: Four pairs of twin articulated coaches; and Birmingham Railway Carriage & Wagon Co. Ltd.: Three buffet cars and three brake-third coaches. One complete train will be made up of the articulated coaches, two buffet cars and two third brakes and will be used in Scotland. The remaining vehicles, comprising one brake third and one buffet car are for use as spares in the North Eastern Area.

D. Wickham & Co. Ltd. has received orders for eight No. 8 petrol-driven light inspection trolleys each to seat two men. Five of these are for the Argentine North Eastern Railway and three for the Entre Rios Railway.

Burleigh Viaduct Reconstruction, L.M.S.R.

Mitchell Bros. Sons & Co. Ltd. has begun preliminary work at the site in connection with the reconstruction of Burleigh viaduct, near Derby, L.M.S.R. A contract for the supply of 600 tons of steelwork, including girders, has been let by this firm to the Butterley Co. Ltd., and the steel cylinders are being supplied by the Horsehay Co. Ltd. An illustration of the existing viaduct appears on page 1030 of this issue. The reconstruction, which it is anticipated will be completed by the end of June, 1935, is being carried out under the supervision of Mr. E. H. d'E. Darby to the requirements of Mr. W. K. Wallace, Chief Civil Engineer, L.M.S.R.

John Baker & Bessemer Limited has received an order from the Egyptian State Railways for 34 locomotive and tender tyres 4 ft. 6 7/16 in. diam. and eight locomotive tyres, 1 ft. 9⅜ in. diam. at a total price of £329 3s. f.o.b. English port.

The United Steel Cos. Ltd. (Workington Iron & Steel Branch) has received an order for 97,000 steel bearing plates for the Peruvian Corporation.

The L.M.S.R. has placed orders for sets of electric train-lighting equipment as follow:—Vickers' Train Lighting Co. Ltd.: 40 sets; J. Stone & Co. Ltd.: 60 sets; and Mather & Platt Limited: 100 sets.

Further Indian Machine Tool Orders

The Agent, East Indian Railway, has placed the following orders for machine tools in addition to those recorded last week:—

Alfred Herbert (India) Limited: One Pels electrically-operated spring press for cold-finishing laminated spring bars, at cost of Rs. 12,435; one electrically-operated heavy-duty, single-ended press for blanking out steel axle-boxes, at cost of Rs. 17,787; one No. 2 belt-driven Lumsden oscillating tool grinder complete at cost of Rs. 5,345; and one No. 1 belt-driven, Lumsden oscillating tool grinder complete, at cost of Rs. 4,565.

The Associated British Machine Tool Makers Limited: One Fairbank Brearley's spring coiling machine, at cost of Rs. 9,531; and one No. 2 Crow's patent bar reeling, straightening and polishing machine complete, at cost of Rs. 3,999.

Machine Tools (India) Limited: One Greenwood & Batley (John Lands type) 2GO double-sided geared press complete with five drawing dies and one trimming die, at cost of Rs. 6,084.

Jessop & Co. Ltd.: One Ross Dormant type platform weighing machine, No. R.C. 162 complete, at Rs. 2,650.

Baird & Tatlock (London) Limited: One Leitz automatic grinding and polishing machine, at cost of Rs. 1,092.

The Agent, East Indian Railway, has also placed the following orders:—

Burn & Co. Ltd.: 550 sets of 90-lb. compound fishplates.

Henry Williams, India (1931) Limited: 400 sets of 90 lb. compound fishplates; 50 sets of 1 in 12 turnouts with 21-ft. overriding switches on steel sleepers for 90 lb. F.F. R.B.S. rails; and 400,000 reversible gibs.

Gobindo Sheet Metal Works & Foundry: 2,000,000 liners for D. and O. gibs and 2,000,000 liners for D. and O. cotters.

Shaw, Wallace & Co. Ltd.: 20 tons of tin ingot.

Shaw, Wallace & Co. Ltd. has received an order from the Indian Stores Department for 96 broad-gauge locomotive tyres for 4-ft. 7½-in. wheel centres, at a total cost of Rs. 12,384 free delivery Kanchrapara at R.M. freight rate.

Fried. Krupp A.G. has received an order from the Great Indian Peninsula Railway for 30 left and 30 right-hand locomotive connecting rods for D/5 class engines, complete with spring steel bushes for big ends, and Tecalemit hard grease fittings.

The Controller of Stores, Eastern Bengal Railway, has placed orders on tender AGT/A/4, item 1, wheel lathe for broad-gauge wheels at Rs. 55,123, and item 2, axle-journal grinding machine at Rs. 51,678 f.o.r. Calcutta. The tender for item 3, grinding and buffing machine, has been cancelled.

W. J. McCallum has received an order from the Indian Stores Department for nine Albion model 41 lorries complete with general transport bodies, at a total price of Rs. 55,710 f.o.r. Lahore.

The North Western Railway of India invites tenders, receivable by January 3, 1935, for two capstan turning lathes.

The Indian Stores Department is calling for tenders, to be presented in New Delhi by January 4, 1935, for the supply of 40,000 rail anchors for 115 lb. rails.

D. Wickham & Co. Ltd. has also received an order from the Central Uruguay Railway for seven petrol-driven gang trolleys and nine four-wheeled trailers.

Enquiry for Overhead Cranes

The Argentine State Railways Administration is calling for tenders, to be presented in Buenos Aires by March 15, 1935, for the supply of 12 electric overhead travelling cranes with capacities ranging from 1 to 76 m. tons. Firms desirous of offering cranes of United Kingdom manufacture can obtain further details from the Department of Overseas Trade.

The Chief Controller of Stores, Indian Stores Department (Engineering Section), New Delhi, invites tenders receivable on the dates named as follow:

For approximately 259 intervehicle 5-point type electric couplers complete with standard length of flexible for broad, metre and narrow gauge coaches required for the Eastern Bengal Railway (January 3).

For approximately 40,000 rail anchors for 115-lb. F.F.B.S. rails required for the East Indian Railway on a special contract basis during the period February 1, 1935, to January 31, 1936 (January 4).

For 5,000 yds. 37/0·064 V.I.R. braided cable 250 volts for the North Western Railway (January 7).

For 136 railway carriage fans for the Eastern Bengal Railway (January 9).

For four sets of electrically-driven vertical spindle tube-well turbine pumping sets each capable of delivering 12,500 g.p.h. against a total head of 48 ft. complete with a.c. motor and starter. These sets are required for the North Western Railway administration at Rohri (January 15).

Forthcoming Events

Dec. 26–Jan. 5.—Schoolboys' Own Exhibition, at New Horticultural Hall, Vincent Square, London, S.W.1.

Jan. 1 (*Tues.*).—Institute of Transport (Bristol), at Bristol University, 5.40 p.m. "Commercial Aviation," by Mr. N. Edgar.

Jan. 3 (*Thurs.*).—Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. "A System of Limit-Gauging Controlled by Colours, with Special Application to Locomotive Repairs," by Mr. G. L. Murray.

Railway Share Market

The stock and share markets have entered upon the concluding weeks of the year with a steadiness which is in marked contrast to former years, when many holders were disposed to liquidate their Home railway stocks on fears of labour unrest. This stile having been happily surmounted, there is no adverse development which should interfere with an all-round appreciation in prices in the ensuing twelve months, provided that traffic receipts respond to the encouraging advices of improved trade being received from the industrial areas.

As far as dividends are concerned, there is less disposition in the Stock Exchange to attach importance to them, although the market is taking greater notice of the prospect of first preference stocks showing appreciation in value if the year's accounts indicate a substantial margin of net revenue over the dividends. London Midland & Scottish 4 per cent. first preference stock is being included in many of the New Year letters of advice which firms of Stock Exchange brokers are sending to their clients. This may mean a substantial advance in the quotation which is now full of the year's dividend. Its payment is indirectly foreshadowed by the recent announcement of the directors that they propose to pay the full rate of dividend on the 5 per cent. redeemable preference stock with which the first preference stock ranks *pari passu*. London & North Eastern first preference stock is another stock to be favourably regarded on the prospect of the past year's accounts showing sufficient increase in net revenue to put the dividend of this stock on an assured basis. When holders of preference stocks of the companies are assured of the punctual payment of dividends at the full rates to which the stocks are entitled, jobbers in the Home railway market look for a rise to as much as par in the 4 per cent. stocks and to a higher premium in the case of the 5 per cent. redeemable stocks.

At present the quotations for L.M.S. first preference and L.N.E. first preference are 15 and 30 points below par respectively. London Transport Board "C" continued to respond to estimates of increased dividend which, it is estimated, is now being earned on the stock. Foreign railway stocks were without feature. San Paulo ordinary stock was unaffected by the cabled announcement of the new tariff arrangement coming into force on January 1.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1933-34	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1933	No. of Week	Aggregate Traffics to Date: Totals This Year	Aggregate Traffics to Date: Totals Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1933	Prices: Lowest 1933	Prices: Dec. 19, 1934	Prices: Yield % (See Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili) & Bolivia	830	16.12.34	18,250	+ 5,450	50	748,730	546,960	+ 201,770	Ord. Stk.	26	11¾	21½	Nil
	Argentine North Eastern	753	15.12.34	6,830	— 717	24	179,286	221,895	— 42,609	,,	14½	5	9	Nil
	Argentine Transandine	111	—	—	—	—	—	—	—	A. Deb.	55	40	50	8
	Bolivar	174	Nov., 1934	5,750	+ 450	47	65,700	67,350	— 1,650	6 p.c. Db.	10	5	10	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	15	11	13	313/16
	Buenos Ayres & Pacific	2,806	15.12.34	69,240	— 6,950	24	1,649,806	1,954,398	— 304,592	Ord. Stk.	26	9 7/16	9½	Nil
	Buenos Ayres Central	190	2.12.34	$108,500	+ $15,500	22	$2,745,800	$2,575,700	+ $170,100	Mt. Db.	30	10	23	Nil
	Buenos Ayres Gt. Southern	5,085	15.12.34	134,211	— 29,455	24	2,895,863	3,705,694	— 809,831	Ord. Stk.	44½	21½	23	Nil
	Buenos Ayres Western	1,930	15.12.34	43,860	— 8,456	24	991,998	1,276,040	— 284,042	,,	34½	15¾	22½	Nil
	Central Argentine	3,700	15.12.34	103,117	— 32,819	24	2,766,791	3,272,504	— 505,713	,,	28½	15	15	Nil
	Do.	—	—	—	—	—	—	—	—	Pfd.	18	10	8	Nil
	Cent. Uruguay of M. Video	273	15.12.34	17,841	+ 1,177	24	387,511	384,776	+ 2,735	Ord. Stk.	20	8	9½	Nil
	Do. Eastern Extn.	311	15.12.34	4,456	+ 964	24	79,562	73,396	+ 6,166	—	—	—	—	—
	Do. Northern Extn.	185	15.12.34	1,833	— 88	24	42,375	41,542	+ 833	—	—	—	—	—
	Do. Western Extn.	211	15.12.34	1,530	— 204	24	34,524	34,076	+ 448	—	—	—	—	—
	Cordoba Central	1,218	15.12.34	27,430	— 3,230	24	722,330	942,600	— 220,270	Ord. Inc.	9¼	2½	4½	Nil
	Costa Rica	188	Oct., 1934	13,646	— 2,769	13	63,485	81,190	— 17,705	Stk.	29	20	30	6 11/16
	Dorada	70	Nov., 1934	10,400	+ 3,000	47	112,800	85,800	+ 27,000	1 Mt. Db.	76½	68¾	102½§	5 7/8
	Entre Rios	810	15.12.34	14,468	— 548	24	280,960	316,161	— 35,201	Ord. Stk.	26½	9	13	Nil
	Great Western of Brazil	1,082	15.12.34	14,000	+ 1,000	50	452,100	510,200	— 58,100	Ord. Sh.	23/6	½	5/8	Nil
	International of Cl. Amer.	794	Oct., 1934	$306,149	+ $28,040	43	$3,946,054	$3,778,077	+ $167,977	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	½	1/16	½	Nil
	La Guaira & Caracas	22¾	Nov., 1934	3,085	+ 585	47	39,150	52,270	— 13,120	Stk.	16	10	8½	Nil
	Leopoldina	1,918	15.12.34	21,003	— 5,284	50	1,266,313	1,230,380	+ 35,933	Ord. Stk.	20¼	10	8	Nil
	Mexican	483	14.12.34	$258,300	+ $50,800	23	$5,370,000	$4,479,000	+ $891,000	,,	3	½	1½	Nil
	Midland of Uruguay	319	Nov., 1934	13,536	+ 2,364	21	52,325	45,688	+ 6,637	,,	2	1	1½	Nil
	Nitrate	401	15.12.34	12,576	+ 4,541	49	242,943	135,270	+ 107,673	Ord. Sh.	7 8/16	1 1/16	2¾	Nil
	Paraguay Central	274	15.12.34	4,680	+ 1,100	24	109,580	79,710	+ 29,870	Pr. Li. Stk.	72	49½	81½§	7 5/8
	Peruvian Corporation	1,059	Nov., 1934	58,693	+ 621	21	309,538	274,940	+ 34,598	Pref.	15¼	5	9	Nil
	Salvador	100	8.12.34	¢18,975	+ ¢4,846	23	¢246,652	¢321,049	— ¢74,397	Pr. Li. Db.	70	66½	70	7 1/8
	San Paulo	153½	9.12.34	29,355	— 3,137	49	1,451,287	1,477,888	— 26,601	Ord. Stk.	102	68	70	5 11/16
	Taltal	164	Nov., 1934	2,225	+ 420	21	11,430	8,892	+ 2,538	Ord. Sh.	15¼	¾	1 5/16	5½
	United of Havana	1,365	15.12.34	14,371	— 688	24	390,012	312,386	+ 77,626	Ord. Stk.	8	2	3	Nil
	Uruguay Northern	73	Nov., 1934	1,322	— 332	21	5,766	6,085	— 319	Deb. Stk.	6	3½	5½	Nil
Canada.	Canadian National	23,733	14.12.34	576,578	+ 13,349	49	31,483,772	28,396,251	+ 3,090,521	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4p.c.	Perp. Dbs.	60½	38	77	5 5/16
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	99¾	85	102½	3 7/8
	Canadian Pacific	17,018	14.12.34	479,400	+ 18,800	49	23,969,000	21,814,400	+ 2,154,600	Ord. Stk.	22 1/8	11	12	Nil
India.†	Assam Bengal	1,329	17.11.34	26,385	— 720	33	886,185	770,697	+ 115,488	Ord. Stk.	79	70	86½§	3 7/16
	Barsi Light	202	24.11.34	4,462‡	+ 1,882	34	94,700	100,335	— 5,595	Ord. Sh.	101¾	70	102½	5 7/16
	Bengal & North Western	2,113	24.11.34	54,233	+ 4,121	8	336,212	354,448	— 18,236	Ord. Stk.	292	240	294½	5 7/16
	Bengal Dooars & Extension	161	24.11.34	3,889	+ 151	34	101,600	101,701	— 101	,,	127	119	125½	5 9/16
	Bengal-Nagpur	3,269	17.11.34	100,575	— 4,146	33	3,592,665	3,337,541	+ 255,124	,,	97¼	83½	103½	3 7/8
	Bombay, Baroda & Cl. India	3,072	8.12.34	173,100	+ 6,525	36	5,388,600	5,149,275	+ 239,325	,,	112	107	112½	5 5/16
	Madras & South'n Mahratta	3,230	24.11.34	84,975	— 10,314	34	3,660,716	3,636,790	+ 23,926	,,	127	114¼	125½	7 9/16
	Rohilkund & Kumaon	572	24.11.34	8,947	+ 678	8	62,004	58,495	+ 3,509	,,	260	225	256½	5 13/16
	South India	2,526	17.11.34	74,474	+ 1,594	33	2,654,500	2,594,155	+ 60,345	,,	119½	112	114½§	7
Various.	Beira-Umtali	204	Oct., 1934	61,135	+ 11,206	4	61,135	49,929	+ 11,206	—	—	—	—	—
	Bilbao River & Cantabrian	15	Nov., 1934	1,614*	— 969	48	18,333	17,992	+ 341	—	—	—	—	—
	Egyptian Delta	621	30.11.34	8,107	— 1,151	35	157,353	149,735	+ 7,618	Prf. Sh.	13 1/32	13/4	2 1/2	4
	Great Southern of Spain	104	8.12.34	2,566	+ 917	49	110,594	109,321	+ 1,273	Inc. Deb.	4	3	3½	Nil
	Kenya & Uganda	1,625	Mar., 1934	240,520	+ 21,064	12	638,137	606,192	+ 31,945	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb	53	33½	50	7
	Mashonaland	913	Oct., 1934	117,273	+ 22,700	4	117,273	94,573	+ 22,700	1 Mg. Db.	91¾	42	100½	5
	Midland of W. Australia	277	Oct., 1934	16,764	+ 2,383	17	86,354	52,543	+ 3,811	Inc. Deb.	89	70	96½§	4 1/8
	Nigerian	1,905	27.10.34	60,580	+ 38,062	30	830,479	671,930	+ 158,549	—	—	—	—	—
	Rhodesia	1,538	Oct., 1934	189,559	+ 29,458	4	189,559	160,101	+ 29,458	4 p.c. Db.	98½	80¾	104½	3 15/16
	South African	13,217	24.11.34	530,903	+ 71,778	34	17,281,894	15,251,020	+ 2,030,874	—	—	—	—	—
	Victorian	6,172	Aug., 1934	740,142	+ 27,143	8	1,433,140	1,380,045	+ 53,095	—	—	—	—	—
	Zafra & Huelva	112	Oct., 1934	13,759	+ 438	43	116,325	112,900	+ 3,425	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

* Rebellion. † Receipts are calculated @ 1s. 6d. to the rupee. ‡ Kartiki Fair, 1934. § ex dividend. Salvador receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the sterling weekly receipts at the par rate of exchange as proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rate of exchange and not on the par value.